The British bird book : an account of all the birds, nests and eggs found in the British Isles

F B. 1869-1945 Kirkman, F C. R. 1865-1940 Jourdain

The British bird book : an account of all the birds, nests and eggs found in the British Isles

F B. 1869-1945 Kirkman, F C. R. 1865-1940 Jourdain

Nabu Public Domain Reprints:

You are holding a reproduction of an original work published before 1923 that is in the public domain in the United States of America, and possibly other countries. You may freely copy and distribute this work as no entity (individual or corporate) has a copyright on the body of the work. This book may contain prior copyright references, and library stamps (as most of these works were scanned from library copies). These have been scanned and retained as part of the historical artifact.

This book may have occasional imperfections such as missing or blurred pages, poor pictures, errant marks, etc. that were either part of the original artifact, or were introduced by the scanning process. We believe this work is culturally important, and despite the imperfections, have elected to bring it back into print as part of our continuing commitment to the preservation of printed works worldwide. We appreciate your understanding of the imperfections in the preservation process, and hope you enjoy this valuable book.

BIOLOGY
LIBRARY
G

THE GROUSE SUBFAMILY

[ORDER: *Galliformes.* FAMILY: *Phasianidæ.* SUBFAMILY. *Tetraoninæ*]

PRELIMINARY CLASSIFIED NOTES

[F C R JOURDAIN. W. P PYCRAFT. A L. THOMSON]

CAPERCAILLIE [*Tetráo urogállus* Linnæus. Caper, cock of the woods, capercailzie, wood-grouse. French, *coq de bruyère*; German, *Auerhahn* (♂), *Auerhuhn* (♀); Italian, *gallo cedrone*].

1. Description.—The capercaillie may be distinguished at once by its great size and the rounded shape of the tail. There is no marked seasonal change of coloration, but the sexes differ conspicuously. (Pl 136.) Length, male 35 in. [889 mm.], female 25 in. [635 mm.] The male has the head, hind-neck, interscapulars, and lower back black, powdered and freckled with grey, the scapulars and wing-coverts reddish brown, freckled with black. The primaries and their coverts are black, but the middle primaries have a patch of white at the base of the outer web, while the secondaries are reddish brown and tipped with white. The tail is black, with an irregularly marbled terminal band of white; the greater coverts black, tipped white. The feathers of the throat are black, and elongated, forming a "beard." Across the chest runs a broad band of dark metallic green, while the breast and abdomen are black, the feathers of the latter region more or less tipped with white; the flank feathers are grey, and white tipped. The beak is of a yellowish white. Above the eye is a fleshy "wattle" of vermilion, which becomes much swollen in spring. The iris is dark brown. The female can readily be distinguished from the grey-hen by the rounded form of the tail, which is traversed by broad black bars, the terminal bar being the widest, the triangular rufous patch at the base of the neck, and the white-tipped major coverts. The general coloration is of a rufous buff barred with black, but black predominates on the back, reducing the brown area on each feather to a narrow terminal band. The male in its first autumn differs from the adult in its smaller size and the absence of the white terminal tail band The juvenile plumage,

746310

in both sexes, recalls that of the female, but differs in that the wing-coverts and scapulars have buff shaft-stripes and the feathers of the body buff tipped. The young in down is buff coloured, with a black horseshoe on the forehead, the free end of the loop being continued backwards, above the eye; there are black mottlings on the sides of the head, nape, and neck, and an inconspicuous median, dusky stripe along the back. A narrow line of bare red skin runs from above the eye backwards and downwards to the aperture of the ear. [W. P. P.]

2. **Distribution.**—In the British Isles this species formerly inhabited the pine forests of Great Britain and Ireland. In Scotland and Ireland it survived till the latter half of the eighteenth century, but then became extinct. It was, however, successfully reintroduced in 1837 to Perthshire, and from thence has spread not only over the greater part of the Tay and Forth areas, but now ranges into Dee, Moray, Argyll, and Clyde, while stragglers have been recorded even from Wigtown and Dumfries in the south and Elgin in the north. (For a detailed account up to 1888 see J. A. Harvie-Brown, *The Capercaillie in Scotland.*) On the Continent it is found in the coniferous forests north to about 69°-70° in Norway and 68°-69° in Sweden, but in Russia it ranges to the Arctic Circle on the Petschora and 65° in the Urals. Southward its range does not extend beyond the Cantabrian Mountains in Spain, the Pyrenees, Alps, Dinaric Alps, Carpathians, and Balkans, and in Russia to the governments of Volhynia, Kieff, Tschernigoff, Orel, Tamboff, Penza, Simbirsk, Samara, and Orenburg. In the Volga basin, according to Buturlin, and also in Asia from the Urals to Eastern Siberia (lat. 65° on the Lena and Mongolia), it is replaced by allied forms. Throughout its range it is resident, confined chiefly to coniferous forests. [F. C. R. J.]

3. **Migration.**—This reintroduced species is resident, and, apart from range extension, stationary. [A. L. T.]

4. **Nest and Eggs.**—The nesting-site is generally in a hollow, scratched out by the hen at the foot of a tree in pine forest. Sometimes it may be found under the shelter of trees blown down by gales, in a low bush, or among thick heather, but these latter sites are unusual. Exceptionally nests have been recorded in a tree and in a falcon's eyrie. The hollow is usually lined with pine-needles, and occasionally a little moss or a few feathers, by the hen. (Pl LIX.) The eggs, as a rule, vary from 6 to 8 in number, but instances of 10 to 12 and even 14 and 15 have been recorded. In appearance they resemble those of the black-grouse, the ground-colour varying from yellowish to reddish yellow, generally with fine speckles of reddish brown, and spotted or blotched rather sparingly as a rule with sienna-brown.

Average size of 60 eggs, 2·27 × 1·62 in. [57·8 × 41·3 mm.]. Incubation is performed by the hen alone, and lasts about a month (Saunders). Mr. W. Evans states that 13 eggs hatched under hens on the 26th day Laying begins towards the end of April in Scotland, and full clutches may be found from the second week of May onward, sometimes as late as early June, but only a single brood is reared in the season. [F. C. R. J]

5. **Food.**—In spring the buds of various trees; in summer and autumn, ant larvæ and other insects, wild fruits and berries, acorns and grain; in winter, the shoots of Scotch fir and larch. The young feed on worms, ants' eggs, and insects, and are accompanied in their search by the female. [W. P. P.]

BLACK-GROUSE [*Lyrúrus tétrix* (Linnæus), *Tetráo tétrix* Linnæus. Blackcock (♂), grey-hen (♀), blackgame, heathcock; heathpoult (Devon). French, *coq de bruyère*; German, *Birkhahn* (♂), *Birkhuhn* (♀); Italian, *fagiano di monte*].

1. **Description.**—The blackcock may be distinguished at once by the peculiar lyre-shaped tail. The toes are scale-covered, and fringed on either side by a pectinate arrangement of horny processes. The sexes differ conspicuously in coloration, and the male shows an imperfect "eclipse" plumage. (Pl 137) Length 23·5 in. [585 46 mm.]. The plumage of the male is black, with a beautiful metallic sheen of steel blue. A bar of white crosses the wing, and the under tail-coverts are white Above the eye is a large "wattle" of vermilion-red. The beak is black and the iris dark brown. The female (grey-hen) is distinguished from the capercaillie female by her deeply forked tail and smaller size. The general coloration is of a rufous buff, more or less heavily barred with black. In the male in "eclipse" dress (July-September) the black feathers on the head, and more or fewer of those of the upper back, are replaced by chestnut or brownish buff feathers barred with black, resembling those of the female, while the chin and throat are more or less white. These dull-coloured feathers are all that survive of a once complete "eclipse" dress. They are retained until the quills of the wing and tail have been renewed The female may at once be distinguished from the female capercaillie by her deeply forked tail. Further, she is less conspicuously barred, the bars being much narrower. On the back, as in the capercaillie female, black predominates, reducing the buff area to a narrow-terminal band in each feather. The upper surface of the fork of the tail, when closed, has a "frosted" appearance. The juvenile plumage recalls that of the

female, but differs therefrom in having rufous buff shaft-streaks at the ends of the wing-coverts, scapulars, and inner secondaries. When about the size of a partridge, the males can be distinguished by the appearance of black feathers on the breast and abdomen, scapulars and interscapulars, and in the tail The immature male resembles the adult, but differs in having less gloss on the plumage, and the feathers of the head and neck tipped with rufous, while the wing-coverts, scapulars, and secondaries are narrowly vermiculated with rufous The young in down may readily be distinguished from the downy young of the capercaillie by the large patch of chestnut on the crown; further, a dusky median dorsal stripe may be distinguished running from the nape backwards to the middle of the back, where it broadens and becomes chestnut in hue. [W. P. P.]

2. **Distribution.**—This seems to be a diminishing species at the present time in the British Isles. In Devon and Somerset, though formerly plentiful, it is now much reduced in numbers, and almost extinct in Cornwall In Dorset and Hants it is now very local and scarce, and in Wilts, Sussex, and Surrey, though occasional stragglers are still met with, it is probably extinct as a breeding species. In Wales it is very local and scarce, but still exists in Brecon and Montgomery, and also in some of the border counties (Hereford, Shropshire, etc.). On Cannock Chase (Staffs.) it is still common, and a few breed in N. Staffordshire and N. Derbyshire, and thence along the Pennine range to the Scottish border, ranging into all the northern counties of England. In Scotland it is unevenly distributed, but found throughout the mainland and many of the Inner Hebrides, but is absent from the Outer Hebrides and the northern island groups. Unsuccessful attempts have been made to introduce it to the Orkneys, Outer Hebrides, Lincolnshire, East Anglia, and several southern counties. In Notts, Leicester, and Kent it is now extinct, but may possibly survive in Worcester. It is not found in Ireland. On the Continent it ranges north to 70° in Norway and 68° in Sweden, while in Russia it extends to 69° in Lapland and 67° in the Urals. Southward it is found in the Urals up to 51°, and from the Samara and Saratoff governments to the Carpathians; it is scarce in Carinthia and Styria, but is found in the N. Apennines, the Alpine range and Savoie, though absent from the Pyrenees. Between these limits it occurs locally in open heaths and birch woods, especially in the Low Countries, Germany, and Denmark In the Caucasus, the S. Urals, and in Asia east of the Urals from lat. 67° N. to Manchuria, it is represented by allied forms. [F. C. R. J.]

3. **Migration.**—Resident and stationary both in the districts in which it is indigenous and in those in which it has been introduced. [A. L. T.]

PLATE LIX

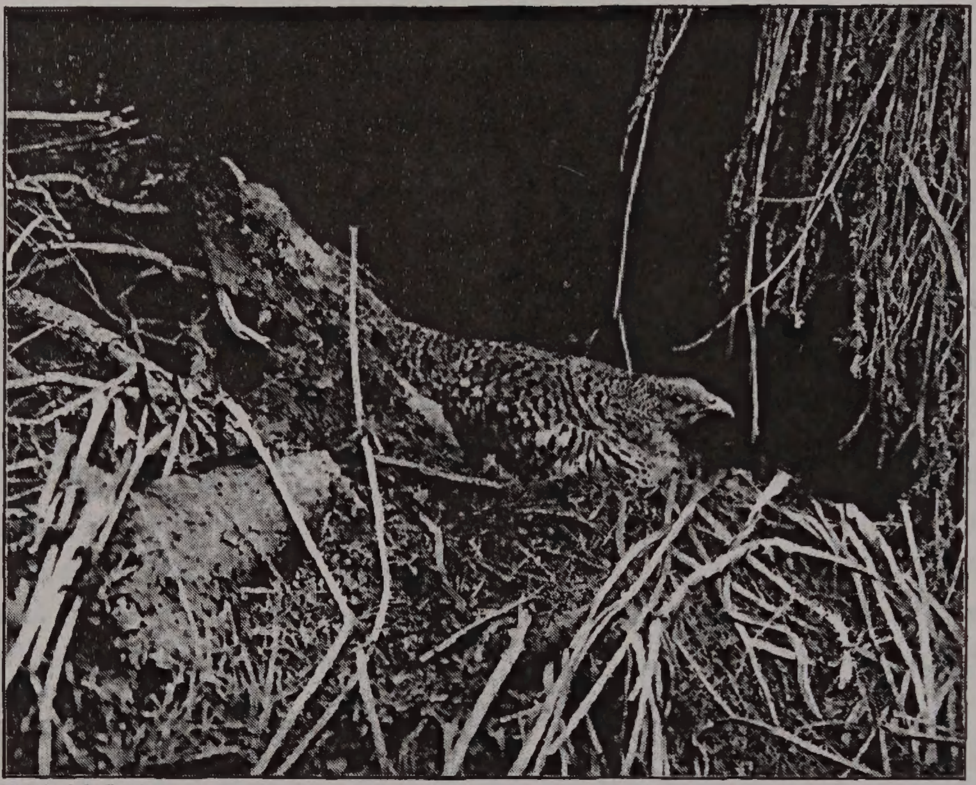


Photo by J. C. Crowley

Capercaillie on her nest

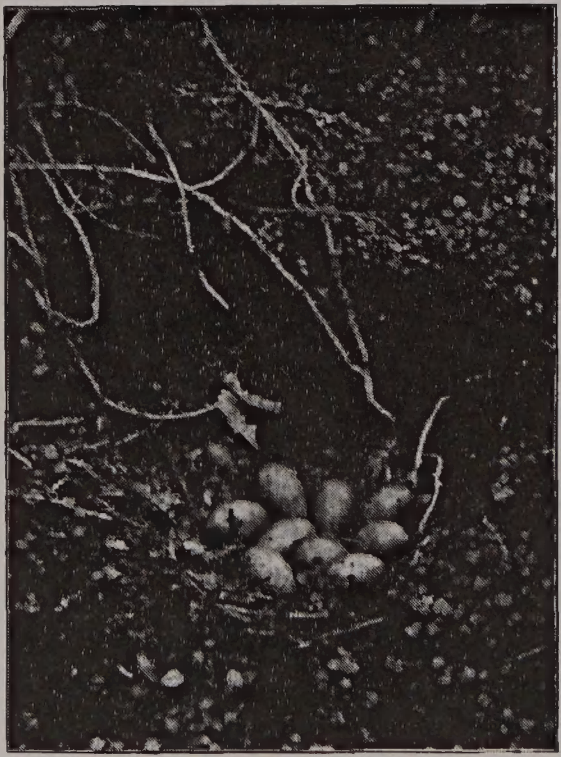


Photo by Howard Bentham

Capercaillie's nest and eggs

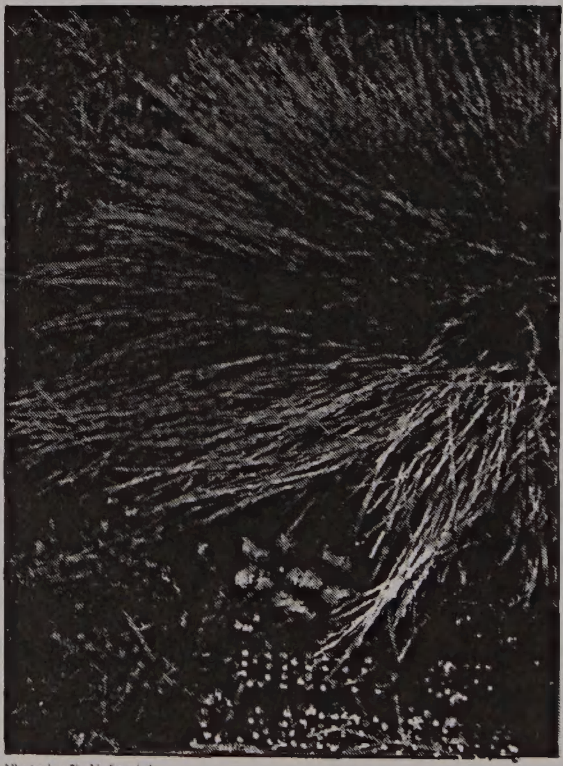


Photo by T. E. Daniel

Nest and eggs of red-grouse

4. **Nest and Eggs.**—A depression in the ground, sometimes in woodland, at other times in the open, is scratched out by the hen, and scantily lined with a few leaves, pine-needles, moss, and feathers[1] (Pl LX.) Here she deposits her eggs, usually 6 to 10 in number, though Mr. Gladstone records 12 and Dr. Westerlund 16 in one nest. The latter case would seem to be due to two hens laying in one nest. The eggs are miniature capercaillie's; yellowish white, sometimes with a distinct reddish tinge, sparingly spotted and blotched with yellowish red or orange-brown. Average size of 33 eggs, 2·0 × 1·45 in. [50 8 × 36 8 mm] Incubation, as this species is polygamous, is carried on by the hen alone Mr. W Evans gives the period as 25 days (under hen), 26th day from laying of last egg; Dr. Heinroth as 26 days, and Mr. H. S. Gladstone as 24 days. Full clutches of eggs may be found from about 10th May onward, and second layings in June and July, but only one brood is reared in a season. [F. C. R. J.]

5. **Food.**—The black-grouse is an omnivorous feeder, but shows preferences when they can be satisfied. In summer grass points, blaeberry shoots, and young heather-tops, ant larvæ and other insect food. In autumn heather, seeds of grass, and various rushes and sedges, grain, and turnips, and numerous berries and wild fruits, such as cranberries, blaeberries, wild strawberries, and rowan-berries. In winter and spring the shoots of larch and Scotch fir, and birch buds are greedily eaten. The young feed chiefly on insect food, and are accompanied in their search for food by the female. [W. P. P.]

RED-GROUSE [*Lagópus lagópus scóticus* (Latham).[2] Moorgame (Lancs.); heathpoult; red-game, muir-fowl, gor-cock (Scotland). As this species is unknown in France and Italy, there are no popular names for it in those languages; German, *Moorschneehuhn*].

1. **Description.**—The red-grouse may always be distinguished by the blackish brown colour of the remiges, the feathered toes, and the absence of pectination along their margins. The sexes differ, and there are marked seasonal changes of coloration. (Pl. 138.) Length 15·5 in [393·7 mm.] The general coloration in both sexes shows an unusual range of variation. A typical male in its "breeding" dress is

---

[1] A nest has been recorded in a tree by Mr H. S. Gladstone (*Birds of Dumfriesshire*, p 322).

[2] Strictly speaking, as only one form of red-grouse is found in our islands (though the willow-grouse has been recently introduced) binomials should here be used for this bird, but as this might cause confusion with the Scandinavian willow-grouse, *L lagopus lagopus* L, the distinguishing trinomial has been added.

of a dark chestnut-red, barred with black, somewhat coarsely on the crown, finely over the back and chest. The breast is blackish. At the beginning of June an "eclipse" dress is assumed, to be shed in October, when the remiges and tail feathers are also renewed. The general hue of the "eclipse" dress is black, irregularly barred with golden buff, but the under parts remain unchanged—in the "breeding" dress—till the autumn moult The female in her "winter" dress, assumed in August, resembles the male, but may generally be distinguished in that her head and neck are more or less conspicuously barred with black, while in the male such markings are less inconspicuous. The breeding dress of the female, assumed during March and April, and answering to the "eclipse" dress of the male, has the feathers of the upper parts black, on the crown barred and tipped with golden buff, on the hind-neck with an interrupted marginal band of golden buff. The scapulars and interscapulars are of a golden buff, with the central area of the feather black and marked by one or more spots or short longitudinal lines of golden yellow, but many of the scapulars have the central black area marked by obliquely transverse bars of golden buff. The feathers of the fore-neck and prepectoral region are margined with golden buff. In some feathers the enclosed black area is marked by one or more longitudinal lines of golden buff, and in others the black area is transformed into black bars on a ground of golden buff. The flank feathers are yellow with broad transverse bars of black The central area of the breast retains the red feathers of autumn dress. The juvenile dress resembles that of the adult female in her "breeding dress," differing therefrom chiefly in that the yellow markings on the back feathers are arranged concentrically; the forebreast and flanks are of a golden buff with a subterminal bar of black, and a black bar across the centre of the feathers, while the breast and abdomen have a typically mesoptyle plumage of greyish yellow feathers, barred with dark grey, and showing that the whole plumage is of the mesoptyle generation. The young in down recalls that of the nestling blackcock, having a patch of chestnut on the crown, which is, however, darker in hue, shading into sepia at the periphery.

Having regard to the great importance attached to the plumage phases of the red-grouse, the following condensed summary has been compiled from notes generously furnished by my colleague, Mr. W. R. Ogilvie-Grant Briefly he recognises in the male three types: a red, a black, and a white-spotted (1) *The red type.* General coloration of a rufous chestnut, wherein white marks on the breast are conspicuous by their absence. Birds so coloured are obtained from the western counties of Scotland, England, and Wales, the Hebrides, and the low grounds of Ireland.

(2) *The black type.* Not a sharply defined type, and is rare. Almost wholly black specimens have been obtained from Caithness, Sutherlandshire, Perthshire, Stirlingshire, Dumbartonshire, and Yorkshire As a rule these black types are represented by abnormally dark specimens of the red or white-spotted forms. (3) *The white-spotted type.* Feathers of the breast and belly, sometimes of the head and upper parts, tipped with white. The most typical examples of this type are from the high grounds of the north of Scotland, and are certainly most characteristic of the Highlands —In the female no less than five types are distinguishable · red, black, white-spotted, buff-spotted, and buff-barred types. (1) *The red type.* This is relatively rare among females, and occurs over the same geographical range as in the case of the male. (2) *The black type.* As rare in females as in males, and occurs in the same geographical areas as in male. (3) *The white-spotted type* As in males; is most commonly met with in the Highlands. (4) *The buff-spotted type.* This is the commonest and typical form of coloration in the female, the feathers of the upper parts being spotted at their tips with white or pale buff. (5) *The buff-barred type.* Characteristic of birds from Ireland. Herein the upper parts are coarsely barred with buff and black, and the female in autumn plumage resembles the typical female from Great Britain in breeding plumage In such birds the plumage presents no appreciable change of coloration throughout the year. The significance of these variations yet remains to be discovered, but they seem to be due to climatic influences. Variations in weight are no less marked. The heaviest birds are said to be those from the moors of Caithness and the south of Ireland, birds from these areas turning the scale at 2 lbs each. A male from Kerry, recorded by Messrs. Ussher and Warren (*Birds of Ireland*), turned the scale at 2½ lbs., but this is a quite exceptional weight. The average weight is 1½ lbs.; females are always rather smaller and lighter. [W. P P]

2. **Distribution.**—This British form is confined to Great Britain and Ireland, but has been successfully introduced into North-west Germany, near the Dutch border, and also to South Sweden. In Scandinavia, North Russia, Siberia, and North America it is represented by allied forms. In England it is found on the Welsh borders (Monmouth, Hereford, and Salop), and from Staffordshire and Derbyshire northward on moorlands to the Scottish border. It has long been extinct in Leicestershire, but has been introduced to West Suffolk, and unsuccessfully to the south of England. In Wales it is general in the north, though absent from Anglesey, and is also found, though less commonly, in the South Welsh counties. In Scotland it is plentiful, owing to careful preservation, throughout the mainland

and on the Western Islands, and is also common in the Orkneys, but introductions to the Shetlands have not been successful. In Ireland it is resident on the mountains and the bogs of the central plain, but is not numerous; and in the Isle of Man, where it had become extinct, has recently been reintroduced. [F. C. R. J.]

3. **Migration.**—Resident. Except that the higher grounds are vacated in winter the species is quite stationary. Examples occasionally occur at some distance from their usual haunts, especially in severe weather, and have even occurred at some of the Irish light-stations (cf. Ussher and Warren, *B. of Ireland*, 1900, p. 230). [A. L. T.]

4. **Nest and Eggs.**—The nest is a mere hollow among heather, ling, or rough pasture, scantily lined with dead grasses and moss, and sometimes a few heather twigs, and is the work of the hen bird. (Pl. LIX.) The number of eggs usually varies from 7 to 12, but instances of 13, 14, 15, and even 17 have been recorded, though the last at any rate was almost certainly the produce of two hens. The ground-colour of the eggs varies from creamy to light reddish white, and they are profusely blotched and spotted all over with deep red-brown, sometimes when fresh almost blood-red, and at other times blackish brown or brownish. The colour is very easily rubbed off when the eggs are first laid. Average size of 36 eggs, 1·79 x 1·25 in. [45·5 x 31·8 mm.]. Incubation is performed by the hen alone, and lasts for 24 days according to Mr. H. S. Gladstone; an egg hatched in an incubator on the 24th day (W. Evans). Exceptionally nests have been found in February and March, but the usual date is about the third week in April in the north of England, and a week or two later farther north. Only one brood is reared during the season, though a second clutch is deposited if the first is destroyed. [F. C. R. J.]

5. **Food.**—Mainly the young shoots of heather and ling, and when these plants are not found, the shoots and fruit of the crowberry (*Empetrum nigrum*). In the autumn the seeds of sedges, grain, and wild fruits and berries. The young feed on flies, caterpillars, and other insects, and the shoots of grass and heather, and are accompanied in their search for food by both parents. [W. P. P.]

PTARMIGAN [*Lagópus mútus* (Montin). Rock-partridge, white-partridge. French, *perdrix blanche*; German, *Alpenschneehuhn*; Italian, *pernice bianca*].

1. **Description.**—The ptarmigan may always be distinguished by the white remiges, and the outer tail feathers, which are black, with white bases and white tips.

The sexes differ, and there are three seasonal changes of coloration. (Pls. 139, 150) Length 14 5 in. [368 3 mm]. The male, from April to July, has the upper parts and flanks black, more or less finely mottled and barred with grey rusty colour on the back, rump, and upper tail-coverts ; the chin and throat are white ; the forepart of the breast is brown, sometimes slightly mottled with rufous, and the rest of the under parts are white The remiges and outer wing-coverts are white, tail feathers black, tipped with white, above the eye is a large "wattle" of vermilion From August to October the upper parts are grey barred and vermiculated with black and white ; a few of the black feathers of the summer dress in the scapulars may give a blotched appearance to this region. The black of the lores is wanting The throat and sides of the head and neck are more or less white, barred with black, while the greater part of the wings and the whole of the breast and abdomen are white The flanks are grey barred and vermiculated like the back. In the winter dress, worn from November to March, the whole plumage is white save for the black lores, a black stripe behind the eye, and the black of the tail feathers. The female, in breeding dress (April to July), differs from the female red-grouse at the same season in that the upper parts are irregularly spotted and barred with buff and white. The flanks are of a golden yellow, coarsely barred with black, while the wings are mostly white. The middle pair of tail feathers are black, barred with rufous, harmonising with the rest of the plumage of the upper parts, the remaining quills are black, more or less tipped with white as in the male, and often with a more or less extensive area of white at the base of the tail. In July the light edges of the feathers of the upper parts become abraded and faded, making the plumage darker than in May. The "wattle" above the eye is much smaller than in the male, and the bill is black In her autumn dress (August to October) she is to be distinguished from the male by the presence of more or fewer of the black feathers of the summer dress The middle pair of tail feathers are usually sandy brown, mottled with blackish, and tipped with white; in some birds one or both feathers may be pure white. In both male and female the feathers of the legs and toes are moulted and renewed between June and September, and the claws are also shed, as in the red-grouse. The female in winter dress (November to March) differs from the male in having no black on the head. In the juvenile plumage the head, upper parts of the body, chest, and sides are black, barred and mottled with rufous buff, most of the feathers having a whitish spot at the tip. The scapulars are black, with a round white terminal spot bounded on either side by a bar of ochreous yellow, while the middle of the feather is traversed by yellow chevron. The primaries are brownish black, mottled with buff on the outer webs. The rest of the under parts whitish, obscurely barred with dusky. The tail feathers are black, irregularly barred and mottled with buff. After the next moult they differ from the adult only in that the outer primaries have blackish markings along the terminal part of the shafts. The nestling in down resembles that of the red-grouse, but differs in having the crown sepia coloured instead of chestnut with a sepia border. Posteriorly this somewhat diamond-shaped cap is bounded by conspicuous patches of light buff [W P. P]

2. **Distribution.**—In the British Isles the ptarmigan is confined to the mountains of Scotland at the present time, though apparently it formerly existed on the fells of the Lake District. Till about 1822 it survived on the high ground of Dumfries and Galloway. It is believed to be now extinct in the Outer Hebrides, though still found in Mull, Islay, Jura, and Skye. On the mainland from Ben Lomond northwards it is found on all the mountains over 2000 feet in height east of the Caledonian Canal. In W. Ross it is plentiful, but seems to be disappearing in W Sutherland and Caithness (Millais), and is extinct in the Orkneys. Unknown in Ireland. On the Continent the ptarmigan is resident in Scandinavia, south to lat. 58½° in Norway, and Dalecarlia in Sweden In N Russia it is found north to the shores of the Arctic Ocean and south to 67° in Lapland and 61° in the Urals. It also occurs in the whole Alpine range, ranging into the Tyrol, Styria, and Carinthia, and also in the Pyrenees and Navarre, but apparently not in the Cantabrian range. In Greenland, Iceland, Spitsbergen, Arctic America, and Arctic Asia it is represented by allied forms. [F C R. J]

3. **Migration.**—Resident: changes of altitude—a species of "vertical migration"—are the only seasonal movements [A. L T]

4. **Nest and Eggs.**—The breeding-grounds of this species in Scotland lie much higher than those of the red-grouse, usually between 2000 and 4000 feet, where there is little vegetation but mosses, hepatics, stunted heather, and other moorland plants A depression is scratched out by the hen, and is usually unlined or only very scantily furnished with fragments of moss and ling and feathers from the sitting bird. (Pl. LX) The eggs are 7 to 12 in number, but usually 8 or 9. They resemble those of the red-grouse, and in some cases are indistinguishable, but as a rule the ground-colour is whiter, the markings more sparingly distributed and blacker, with less of the rich deep red-brown so often found in the eggs of the red-grouse. Average size of 35 eggs, 1·70 × 1·2 in [43·18 × 30·7 mm.]. Incubation is carried on by the hen alone, who is a very close sitter The period, according to Mr. J. G. Millais, is

Photo by J. C. Crowley

Greyhen on her nest

Photo by J. C. Crowley

Ptarmigan on her nest

nine days longer than that of the red-grouse. Naumann gives it as three weeks, but not from personal observation, and it is probably on account of the greater cold at higher elevations that it differs from that of the red-grouse. In Scotland laying begins about 20th May, and the clutches are complete about the beginning of June. When the first layings are destroyed by heavy snowfalls or by vermin, eggs may be found late in June or in July, but only one brood is reared during the season. [F. C. R. J.]

5. **Food.**—The shoots and fruits of Alpine plants, especially of blaeberry, blackbear-berry, and small red cranberry; these form the staple diet. Small plant leaves and lichens, especially of the "reindeer-moss," *Cladonia rangiferina.* The young feed on young grass shoots and blaeberry leaves broken up by the parents, and are accompanied in the search for food by both parents. [W. P. P.]

THE GROUSE SUBFAMILY

[W. P. PYCRAFT]

Of the birds which come under this heading we know more, as regards their life-history, perhaps, than of any other of our native avifauna, though, curiously enough, much that would be supposed to be common knowledge among sportsmen is yet known only to a relative few, whose interest in their coverts does not begin and end with the shooting season. To them we look for aid in revising what has already been recorded, and in filling the many gaps in our knowledge, more especially of what takes place during that period which falls within the "close season." And what takes place during this time can only be discerned by the most careful and laborious observation

Few birds display a greater power of adaptability to environment. For save that none have become aquatic, there are few places on the earth's surface where, in one guise or another, they do not thrive: they are at home alike on the burning desert, in the jungle and the gloomy forest, or amid the snow-covered heights of the mountains. Yet whatever may be their climatic environment, the nature of their covering is the same That is to say, those which live, for the most part of the year at any rate, amid the snows are clad no more thickly than those which live where snow can never fall, for no game-bird ever develops an under-covering of down feathers, though ptarmigan and willow-grouse have feathered legs and toes; but so also do many birds which, so far as we can see, have no need of such investments.

In all that concerns the continuation of the species they display every possible difference. For while some are monogamous, more are polygamous None, however, lay double-spotted eggs, and all have precocious longitudinally striped young. These afford a striking contrast with the precocious young of, say, the Anatidæ And this

Plate 136

Capercaillie; male in front

By G. E. Lodge

G. E. Lodge

The descent to lower levels, on the part of the capercaillie, at the end of the autumn, however, is not universal, for it would seem the old males but seldom forsake the high ground, while, on the other hand, it is not uncommon for an odd male or two, and a few females, to remain on the lower ground to breed.

Mr. Ogilvie-Grant's account[1] of the capercaillie, while confirming that of Mr. Millais, omits any direct reference to these seasonal movements from the higher to lower ground, though they are perhaps implied in his remarks. It is a bird, he says, of the pine forests, and spends the greater part of its time in the branches, feeding on the tender shoots of spruce and larch, but it is fond of various ground fruits, in search of which it wanders to comparatively open country, far from woods, and displaying a great liking for grain, visiting the stubbles in fine weather.

There is a puzzling discrepancy in the accounts which have been rendered of the habits of black-game, even in the records of those who, both as ornithologists and sportsmen, must be regarded as authorities on this subject, a discrepancy perhaps traceable to differences of behaviour due to local conditions which have escaped the notice of the authors of these records. No useful purpose would be served, even if our space permitted, by collating all the varied statements which have been made on this theme; it must suffice to take the evidence of the three men best qualified, perhaps, to speak as to the life-history of the game-birds of these islands—Mr. Abel Chapman, Mr. Ogilvie-Grant, and Mr. Millais. According, then, to Mr. Chapman, black-game assemble into parties about the end of September. These packs, from a dozen to fifty or one hundred strong, "cocks and hens together," may at this season be readily detected, being always, whether resting or feeding, in the open; since now, having finished their moulting, they disdain concealment. During October they abandon the higher moorland and resort to lower grounds adjacent to tillage, haunting the stubbles, and feeding largely on heather, hips and haws, buds of birch and alder, and the various plants which grow on old grass land. By the end of the month, however, it would seem that, in Northumberland at any rate, these birds return to their old haunts on the high moors, where, during November and December, they seem to be met with in large packs, choosing some flat-topped ridge whereon patches of short, sweet grass and heather are found. Heavy rains, gales of wind, and deep snow, it is to be noted, affect them less than is the case with grouse, as we shall presently show. They seem under such conditions to seek the lower wooded valleys and to shelter in the trees, perched like rooks on the bare birches and hawthorns, and feeding on haws and buds.

---

[1] W. R. Ogilvie-Grant, *Lloyd's Natural History Game-Birds*, vol i.

Mr. Millais seems to incline to the belief that the sexes, when "packing" in September, separate, the old males at any rate living apart from September to March: indeed he goes further, for, in another passage in the account to which we are referring, he remarks that the males normally live apart from the females, keeping together throughout the summer in small parties, "'even' in July and August when in eclipse"—the season most of all when one would imagine they certainly would seek seclusion. But whether the packs are mixed or not, they do not apparently change their quarters, according to this author, till compelled by "the first fall of snow," when they forsake the fringe of the moor for the deep heather found in the birch and rowan area, in which sparse cover indeed, it seems, a few birds may be found the year round. As a rule, he says, black-game avoid heavy timber, seeking shelter therein only during exceptionally prolonged hard weather. And he, as it were, clinches this point by remarking that as a rule they roost on the ground, but occasionally in trees.

One gathers from this brief sketch, and from Mr. Abel Chapman's account, that the blackcock is not partial to woods. Yet Mr. Ogilvie-Grant, who may certainly claim to have a fairly intimate first-hand acquaintance with this bird, tells us that it is a denizen of the woods

—pine and birch forests—spending most of its time amid the branches, and roaming to the open moors and stubble to feed, gathering on the latter in enormous flocks, morning and evening.

Whatever may prove to be the cause of the discrepancies in the published records of the habits of the black-grouse, it is clear that it possesses greater powers of adaptability than is displayed by the capercaillie, and hence the more restricted range of the latter.

What is true of the blackcock in this matter of adaptability is true also of the grouse, or, to be more exact, of the red-grouse, though its chosen environment differs. Wherever heather and ling flourish, from the sea-level to the rock-strewn summits of the highest moorlands, there may grouse be expected, for such plants furnish their favourite food. But, be it noted, there are large areas in Scotland, England, and Ireland where these birds also thrive, though they must depend for food throughout the greater part of the year on grass and rush seeds, and the leaves and fruits of the common crowberry (*Empetrum nigrum*); but when the autumn comes they feast riotously on grain gleaned on the corn-fields, and on all wild fruits within their reach, especially blueberry, blackberry, cranberry, and cloudberry.

As might be supposed from the extent of their vertical range, grouse suffer much during the later autumn and winter months when these happen to be visited by unusually severe weather. Roaming about in small packs of both sexes, broods of the year or females alone when the weather is open and mild, gales or heavy snow speedily effect a union of the scattered packs, followed, in the case of the birds haunting the higher ground, by a migration to the more sheltered valleys. Here, even if there be heavy snow, they contrive to find a living, but only if the winds be high enough to blow the snow into drifts, leaving bare patches, whence food can be obtained. When the snow lies deeply, and uniformly, from lack of wind, or snow followed by a partial thaw and renewed frost, locking up all food, they speedily feel the pinch of hunger, and then migrate for great distances, travelling in immense packs. Such an exodus, Mr. Millais tells us, took place in Northumberland during the winter of 1884-85. "All food was frozen," he remarks. The grouse soon accepted the conditions before it was too late, and gathered in thousands on the heights of Simondside, and from thence passed in immense packs across the Coquet to the sheltered moors about Cragside During the severe weather of 1886 and 1895, again huge packs were driven to the low country, where they fed on corn, turnip leaves, buds, and hedgerow fruits, many perching on the hedges and the lower boughs of trees, such as thorn and rowan, to secure the berries still left. The behaviour of grouse during these bursts of inclement weather seems to be just what we should expect. This being so, it is the more remarkable to find another ornithologist, and one who speaks with authority, giving an account of the behaviour of grouse during heavy snowfalls which is utterly at variance with that of Mr. Millais, and seems, further, to be outside the experience of other ornithologists whom I have consulted. I refer to that of Mr. Abel Chapman,[1] who tells us that within twenty-four hours after a heavy fall of snow the grouse indeed disappear, but they are underneath it, having constructed a "perfect network of burrows—most nearly resembling a rabbit warren. You may have seen from afar—or you may not—just the head of one grouse, the sentry on guard Quite as often this precaution is neglected, and a whole pack will be asleep in their burrows, secured, they imagine, by the miles of snow-fastnesses that surround them." This habit, of instantly burrowing beneath the snow as soon as it is deep enough, Mr. Chapman holds, is a survival from times when winters were more severe than now, and he reminds us that it is the invariable practice of the nearly allied rock ptarmigan, *Lagopus hemileucurus*, in Spitsbergen, which enjoys but four months of life in daylight and aboveground, the remaining eight being perforce spent in snow-burrows and tunnels in the dark. In the Arctic and Scandinavia, he writes, "Nature has organised a beautiful provision to meet these cases. For the earlier autumnal snows fall soft and light, easy of excavation, and are, in fact, already ramified in every direction with grouse-burrows and tunnels long before that subsequent stage when severe frosts shall have indurated its substance and steeled its surface. Beyond that, the grouse have here provided, not merely a winter home, but—more important still—a full winter's stock of provisions. For these early autumnal snows hold enclosed within their soft and easily excavated recesses the whole abundant crop of Arctic wild fruits and berries, 'preserved' for the birds' winter needs, and guarded by the frost-steeled roof above against risks of decay." But when strong winds sweep clear the weather slopes of the hills, he remarks, grouse stay aboveground, gathering in large packs to feed on the heather swept clear of snow. Thus, according to Mr. Chapman, there is little or no migration takes place as a consequence of inclement weather; the birds adapt themselves to the prevailing conditions—where snow falls deep they burrow, where it is blown into drifts, leaving bare places, they stay and make the best of it. Be this as it may, it reveals a discrepancy in observation of one of our most jealously guarded birds which is difficult to account for, and seems to show that those who are most zealous in their slaughter are least interested in their mode of life! It does not seem possible that Mr. Millais and Mr. Chapman can both be right. What, then, are the facts of the case? That such a question should have to be asked to-day is astonishing. Yet there are many who gravely assure us that there is nothing more to be learnt about British Birds!!

---

[1] *Bird-life of the Borders*, p. 263.

The curious, and apparently almost unknown, burrowing habits described by Mr. Abel Chapman in the case of the red and willow-grouse naturally lead us to ask, What of the ptarmigan in this respect? If no mistake has been made in regard to the two first-named species, the last, one would imagine, would certainly also elect to spend the winter months in a similar retreat. Yet I have been unable to find any records of such fact. Heavy snowstorms unaccompanied by wind, resulting in a uniform mantle of deep snow cutting off their food-supply, will drive them to lower levels. If there be wind, exposing patches of ground whence food is obtainable, no migration is necessary. Where the snow forms but a loose covering, not too deep, the birds, Mr. Millais tells us, will burrow therein for food, while in Norway they often follow the reindeer and dive into the holes made by the deer in scraping up moss with their feet, thereby securing the ice-preserved berries. Save, indeed, when it is abnormally deep, snow has no terrors for them, as is shown by the fact that they roost thereon nightly. At such times they preserve a scattered formation, unlike the grouse and the partridge, which sleep close together. These roosting-holes are easily discovered by the pile of dark droppings left therein. Similarly Seebohm[1] remarks of the capercaillie that it "generally roosts in trees, but in severe seasons it will seek shelter from the cold by burrowing into the snow." But there is in these cases no burrowing and tunnelling such as Mr. Chapman has described in the case of the rock ptarmigan.

If, however, the weather becomes unusually severe, then a general and extensive exodus becomes imperative. Their more extended wanderings however, in Scotland at any rate, are implied rather than observed. And this because such journeys are performed at altitudes too high for observation. But the fact that high mountains known to have been the resort of large numbers of ptarmigan have been found suddenly deserted, while distant mountains under less severe climatic conditions—but on which the stock had been reduced to the vanishing point—have been found "alive" with birds, leaves little doubt as to the interpretation to be placed on the phenomena. On the Continent, however, and in N. America—in the case of the doubtfully distinct rock-ptarmigan—migratory movements on a large scale have been observed, in Labrador extending over several hundred miles.

In varying degrees, then, capercaillie, blackcock, and red-grouse all migrate to avoid stress of weather, or rather to secure food. And the same is true also of the ptarmigan. But, living in regions where

---

[1] Seebohm, *British Birds*, vol. ii p. 442

Plate 137

Blackcock (two challenging) and Greyhen

By A. W. Seaby

vegetation is at all times scanty, it is a matter for comment indeed that it contrives to secure a sufficiency even during the plenty of summer and autumn. Heather and ling, and the birch and conifers, which so largely supply the needs of the former birds, grow at lower altitudes than the ptarmigan frequents, and still more remote are the bounteous fruits of autumn furnished by the corn-fields. The fruits and leaves of alpine plants, and the fruit and leaves of blaeberry, blackbear-berry, and small red cranberry, form their staple diet: when these are to be had in plenty, indeed, they will eat nothing else. Insects during the summer furnish a welcome variety. True, Naumann[1] assures us that ptarmigan eats the buds of birch and other trees, and the needles of conifers, but these statements need confirmation, as also does the statement of Mr. Howard Saunders that the tops of ling are eaten

That the conditions of existence at these high altitudes are severe, and that this bird is not able to adapt itself readily to new conditions, is shown by the fact that its range is steadily decreasing in Great Britain. It seems never to have inhabited Ireland, and its supposed occurrence in Wales in times past is doubtful. Long since it occurred on the fells of Westmorland and Cumberland, but is now entirely confined to Scotland (see p. 10). There also its range has diminished, and is diminishing. It would seem, as we have suggested, that the ptarmigan is lacking in plasticity, and is in consequence unable not only to extend, but even to maintain its range. The curiously specialised nature, the inherent inability to adapt itself to new conditions, which the ptarmigan displays, make the avoidance of its enemies a difficult matter Its chief foes are the golden eagle and the hill fox But of late years a new enemy has arisen in the common and other gulls, which make merciless raids upon its eggs. Against the eagle it is largely protected by its plumage, which at all times of the year bears a marvellously close resemblance to its surroundings, but the fox and the gull cannot so easily be avoided. During the winter months, indeed, the eagle commonly seeks its quarry at lower levels, finding it even more difficult to see its feathered victims amid the snow than amid the barren rocks during the summer. That they hold the eagle in great dread is shown by Mr. Millais, who tells us that on hills where they are subject to constant alarms from this bird they are always very wild. Thus it is not surprising to find that natural selection has been vigorously at work eliminating all but the largest winged birds. For its size, indeed, the ptarmigan has the largest wings of any of our game-birds. Thus they can ascend and descend perpendicular slopes of several hundred feet at great speed, and without apparent effort Even young birds, no bigger than the thrushes, Mr Millais tells us, can do this To escape the swoop of their powerful enemy they will sometimes take a sudden dive and a swing towards the rocks, conforming precisely to the contour of the mountain, and in this way completely evade capture. Another factor in determining the size of the wings is the need for migration to escape the rigours of exceptionally severe weather. But on this head enough has already been said.

---

[1] Ptarmigan shot in Norway contained in crop leaves of birch and sallow, and tops and berries of crowberry. Dwarf birch and sallow crawl about the rocks like ivy on the high ptarmigan ground in Norway. Willow-grouse shot in same district contained whortleberry (blaeberry) leaves and berries, also leaves and young catkins of birch, and a few heather tops (species of heather not noticed). [W. R. OGILVIE-GRANT.]

We must turn now to the subject of coloration and plumage changes, which, though it does not, strictly speaking, fall under the head of habits, is closely connected therewith, and is, moreover, of such exceptional interest that it demands exceptional treatment. The males of the capercaillie and the blackcock are strikingly dissimilar, even though they have much in common. The females, on the other hand, differ conspicuously from their mates, and much more nearly resemble one another than do the males. Thus we may infer that originally both sexes, when adult, were coloured like their respective females, as they are still when in the juvenile plumage. That there is weighty evidence in support of this assumption is exhibited at any rate in the case of the blackcock; for this bird, be it noted, for a short space annually exchanges the brilliant metallic blue of the head and neck for the similar dull hues of the female. Just, in short, as the head and neck are the last to lose the down feathers, so also they are the last to lose the earlier, ancestral, brown livery, which elsewhere on the body has become eliminated. These brown feathers are worn during the months of July and August, when the heavy and trying autumn moult is taking place. At this time flight, save for a few yards, is impossible, for a large proportion of the wing quills are then shed, and the tail feathers have dropped completely; so that the brown-barred coloration of the head and neck possibly form a protective mask. But apart from the "usefulness" of this peculiar colour change of the head and neck, there can be no doubt about the relations it bears to the more complete "eclipse" plumage of the mallard.

Thus the resplendent plumage, in the case of both species, answers to the "nuptial" dress of, say the knot, the ruff, or the dunlin. But in the three last-named species, it is to be remarked, the nuptial dress is assumed by a spring and not an autumn moult, as in the case of the Grouse family, wherein it would seem the resplendent dress developed what we may call a precocious tendency, changing the time of its appearance from late to early spring, and from early spring to late winter, and thence back to late autumn A link in the chain of evidence seems to be furnished by the male red-grouse This species, like the mallard, breeds in the dress assumed at the autumn moult. In June, after the trying period of courtship is over, he puts on a conspicuously different livery, answering to the "eclipse" dress of the mallard, which is discarded at the autumn moult for the dress which is to serve as the breeding dress. That this plumage, assumed in June—the plumage which Mr. Ogilvie-Grant has called the "autumn" plumage—answers to the so-called "eclipse" plumage of the ducks is, I believe, unquestionable, though it differs less markedly from the dress which is to be the breeding dress—

the "winter-summer" plumage of Mr. Ogilvie-Grant—than in the case of the two plumages of the mallard.

Objections may be raised to this interpretation, but nevertheless, when the facts are squarely faced, it will be found that such objections are groundless. The facts alluded to are as follows:—In a large number of species both adults and young wear a similar and dull-coloured dress throughout the year. In a considerable, but smaller, number of species both sexes, and the young, are similarly but brightly hued. Between these extremes are many gradations, permutations, and combinations. But we may put it, in a general way, that the first to develop resplendent plumage is the adult male, and then as a "breeding" or "nuptial" dress, to be speedily replaced by one of more sober coloration, *e.g.* ruff (*Machetes* (*Pavoncella*) *pugnax*). The female and young in such cases retain the ancestral livery. Later the adult female assumes the dress of the male, leaving the ancestral dress to the young. The blackcock and the partridge[1] indicate the manner in which the earlier ancestral livery is gradually eliminated, and the "nuptial" dress from a seasonal, becomes a permanent livery.

This condensed epitome of plumage evolution may help, it is hoped, to bring the puzzling anomalies of the red-grouse liveries into line with what obtains in the matter of plumage sequences elsewhere. Regarded in this light, then, the plumage of the male red-grouse, which is assumed at the end of the autumn, answers to that of the mallard assumed at the beginning thereof, and in both cases it is worn after the breeding season. The mallard, at this time, goes into "eclipse," that is to say, he exchanges his bright livery for one of more sober hues, and closely resembling that of the female. The red-grouse at the same season assumes what is generally called an "autumn" dress, adopting the nomenclature of Mr. Ogilvie-Grant. It answers to the "eclipse" dress of the mallard. But for the fact that this dress does not afford such a striking contrast with that of the "eclipse" dress, this homology would leap to the eyes. This "eclipse" dress answers in both cases to the "winter" plumage of birds such as the ruff, knot, and dunlin. The brightly hued livery worn during the rest of the year by the mallard and grouse answers, as we have already remarked, to the "breeding" dress of these Limicoline birds: but this fact has been lost sight of owing to the process of accelerated development which it has undergone. In the black-grouse, capercaillie, and in the common partridge this gradual decline of the "eclipse" or "winter" plumage has proceeded yet further, so that the head and neck alone, for a short period, assume an "eclipse" or "winter" plumage. In the pheasant these last relics have completely disappeared, and herein we have the last link in the chain of evolution from a permanent dull to an evanescent resplendent type of dress, and thence to a permanent resplendent livery. In some species, *e.g.* parrots, both sexes have participated in this glorification, in others the males only, but the significance of this difference cannot be discussed here.

---

[1] That the interpretation of "eclipse" plumages here given is well founded is shown by the fact that in the partridge, wherein both sexes are coloured alike, the male and female undergo a similar phase of "eclipse", this is what we should expect if the premises of this argument have any solid foundation.

It would most certainly make for clearness if some term could be agreed upon whereby we could distinguish between typical "nuptial" plumages like that of the ruff and knot, plumages assumed only during the season of courtship, and those which answer to nuptial plumages which have become, or are in the way to become, permanent. The latter might well be called supernuptial plumages. The mallard, red-grouse, blackcock, and pheasant are types of the latter kind.

So far nothing has been said in this connection of the plumages of the female red-grouse. This must now be considered. Mr. Ogilvie-Grant was the first to point out the curious fact that the moulting periods of the two sexes are not synchronous. For what answers to the supernuptial plumage of the male (the "winter" dress or "autumn-winter" dress of Mr. Ogilvie-Grant) is worn by the female from August to March, instead of November to June. In other words, the female retains what answers to the supernuptial dress of the male a whole month longer—eight months as against seven; while similarly she wears her "eclipse" plumage—the "summer" breeding plumage of Mr. Ogilvie-Grant—a month less, April to July, or four months as against five in the cock.

These discrepancies depend, possibly, not so much on inherent distinctions as on changes in the metabolism brought about by internal parasites! That is to say, the incidence of disease falls differently on the sexes: since during April and May large numbers of cocks appear to fall victims to a parasitic worm, resulting in the disease known as strongylosis. According to the statistics of the recent Grouse Commission, about eight cocks to one hen succumb at this season, possibly because exhausted by the intensity of the courtship, while the female becomes more susceptible to disease after the labours of egg-production and incubation; but then her "eclipse" or moult is accomplished. This explanation, however, is lacking in cogency: another is needed

On this subject of the moulting and seasonal changes of coloration in the red-grouse a few remarks yet remain to be made. As to the order of the moult, Mr. Grant has pointed out that the first feathers of what he terms the "winter," and what I have termed the "supernuptial," moult begin to appear on the rump towards the end of August or beginning of September, and from thence onwards the renewal of the feathers spreads towards the head, which is the last to change. The "eclipse" dress is assumed in the opposite order —the head and neck being the first to change. But the feathers of the breast and abdomen, be it noted, are not moulted till the autumn, when the "winter" or supernuptial dress is assumed. This fact is one of considerable significance, marking, it would seem, the beginning of the end of the "eclipse" dress—the last phases of which are seen in the capercaillie, blackcock, and partridge, wherein, as we have already remarked, only the head and neck retain remnants of this ancient dress. In June the feathers clothing the "legs" and toes

Plate 138

Red-grouse; cock (upper) and hen

By A. W. Seaby

are moulted, and in July, when the new white leg feathers are appearing, the claws are shed. This shedding of the claws, which occurs also in the red-grouse, is a curious phenomenon difficult to account for.

Finally, it has been asserted that the "eclipse" dress of the female red-grouse is assumed in part by a moult, and in part by a repigmentation and a rearrangement of the pattern in the old feathers of the "supernuptial" dress. There is absolutely not a scrap of evidence, worthy of the name, in support of such a contention: all that we know of the structure and development of the feather, and of the physiological changes of the body generally, is in direct conflict with such an assumption.

We come now to the plumage-changes of the ptarmigan, which, perforce, have been left till the last, since they are remarkable for the fact that they moult no less than three times during the year. This peculiarity, however, be it noted, is shared with the willow-grouse, a species closely resembling the red-grouse, but differing in the assumption of a white winter dress, and the white remiges and wing coverts, and extensive area of white on the under parts. We may probably, therefore, regard this white winter plumage as a livery superimposed on the two normal plumages. The nuptial, or summer plumage of the ptarmigan, it will be noticed, makes its appearance during March and April, and by the end of May is complete This dress is worn till the end of July. In August the blue-grey dress already described is assumed, and this is worn till the end of October or well into November in mild seasons, when the white dress of winter is assumed.

That the three distinct liveries of the ptarmigan are all highly protective in their coloration there can be no question: there are few birds, indeed, which demonstrate the theory of protective coloration better than the ptarmigan. On this more will be said presently.

What now remains to be said of the Grouse-tribe concerns the history of their courtship and the care of the young: and the purpose of these pages will best be served if this be told dispassionately.

To begin with, then, while the capercaillie and the black-grouse are polygamous, the red-grouse and the ptarmigan are monogamous. Hence what we may call the initial stages in the matter of the reproduction of the species find more or less strongly contrasted modes of expression.

The courtship of the capercaillie is sufficiently remarkable, and has attracted the attention of most ornithologists, though these, for the most part, have had to acquire their facts at second hand. Of our countrymen perhaps Mr. J G. Millais, and of Continental naturalists Prince Fursterberg, have seen more than most of this phase of the capercaillie's life, and accordingly I give, in a condensed form, their account of what happens at this time. Briefly, at about the beginning of April the cock, just before dawn, repairs to some favourite tree—used year after year—and there performs a most wonderful, if unmusical, serenade. With outstretched neck, drooping wings, and spreading tail he gives voice to a weird, uncouth kind of song, described by Prince Fürsterberg as divisible into three parts—(1) *klick-kléck* (pause) *klick-kléck* (pause) *klick-kléck.* At the commencement these notes sound like two little sticks knocked together at intervals of ten or fifteen seconds, getting quicker and quicker till at last they become bell-like. Then follows part number two, which is likened to drawing the cork out of a bottle. The final phase is like the twittering of a bird or the grinding of a knife—*sch-scht-ssts-pss-sch-scht.* But this description conveys no conception of the intensity of feeling which is always displayed during this time. The "song" gradually becomes so fervent, so full of passion, as to deaden the singer to all consciousness of the outer world, and, as a consequence, some "sportsmen" contrive to find a keen enjoyment in stealing up to the bird and shooting it even as it sings! Mr. Millais' description of the song is less detailed, and conveys a somewhat different impression. He likens it to a "variety of noises, or squalls, like two cats fighting at a distance." And these musical efforts are occasionally varied by a wild leap into the air and much flapping of wings. This strange performance is known as the "lek" or "spel"

Of the behaviour of the hens in regard to this display, strangely little has apparently been recorded. Mr. Millais remarks that "soon after dawn the hens arrive, and run about in some excitement on the open sward near the foot of the "spel tree," while in Lloyd's *Game-birds and Wild Fowl of Sweden and Norway* (p. 21) the females are said to gather at the "laking places," and by harsh croaks endeavour to attract the attention of the male when in ecstasy. Finally he descends and pairs with each in succession. Evidently in this theme much yet remains to be discovered.

Contrast with the behaviour of the capercaillie that of the black-grouse, also a polygamous species, at this time. As in the case of its larger relative, courting begins early in April—weather permitting—but the rôle of the wandering troubadour is exchanged for a species of tournament. A number of males gather at dawn in some open spot, generally a sloping sward of short green grass or some rushy field near the moor in which they have roosted. In assembling they keep up a more or less continuous, resonant, whining call, designed to attract the females which appear anon. Meanwhile two males will meet and proceed to battle: facing one another with lowered head, drooped wings, and arched tails, spread fan-wise, but with the long curly feathers nearly touching the ground They "set" some thirty yards apart, and advance to within a few feet of one another, then skirmish. Or one will seize the other by the neck and administer a sound beating with his wings. The vanquished then retreats, and the victor mounts some hillock and crows a defiant challenge, changing his tactics, however, to suit the altered conditions. He rises to meet his foe and watches him, with lowered head, allowing the attacker to waste his energies in trying to get above or below his guard. Then suddenly he pounces down on his antagonist, sometimes to engage in a conflict which may last for an hour.

At the approach of the first female hostilities cease, and the males begin a sort of dance, leaping and fluttering into the air several feet Each "dances" furiously, uttering the while a hoarse cry, each trying, it would seem, to drown the voice of his neighbours. In the intervals of such battles a curious call is commonly emitted, which is likened to that of a cat on the housetops, but hoarser.

Sooner or later, however, the successful males get together a harem, and depart each to his own ground. But until this takes place, the "lek" of the morning is repeated again in the evening, but with less spirit.

A curious fact, to which attention was first called by Naumann, and among British ornithologists, I believe, by my friend Mr. Abel Chapman [1] — Naumann's observations having escaped notice in this country — is that in October blackcock display a sort of revival of the amatory instincts. "On wet foggy mornings in particular," he remarks, "one hears the old blackcocks crooning, bubbling, and sneezing as excitedly as on a fine morning in spring. With a glass I have watched one surrounded by his harem, strutting round some bare little 'knowe,' in fullest display, with neck swollen, tail expanded erect, and wings trailing—truly a remarkable spectacle in October. Whether it is a chronological miscalculation, or arises from a specific cause, the origin of which is lost in the mists of a remote past, the instinct is certainly conspicuous, and for want of a better name I will coin the word 'pseudo-erotism' to designate it. The character is not confined to black-game, for grouse conspicuously, and golden plover to a certain degree, display pseudo-erotic instincts" To these Mr. Millais adds the capercaillie. But these unseasonable displays lack the fire of the spring contests, when rivals occasionally fight to the death, at any rate in the case of capercaillie.

Neither with the red-grouse nor with the ptarmigan do we meet with the same intensity of emotion displayed by the capercaillie and blackcock when courting. This is explained by the fact that grouse and ptarmigan are monogamous. The former, after the break-up of the large packs in early spring, resort to coveys again, and it is between the males of these coveys that rivalry is displayed. There is no regular meeting-place, as with blackcock, to which males resort. They meet rather by accident, or in answer to challenges. They fight after the fashion of blackcock, but do not lift the tail so high. Each attempts to deal the other a blow on the head with his beak, springing up in the air and striking downwards. Should one seize the other on the ground, it belabours its victim with both wings and feet. The victor finally flies up into the air and utters a loud "*kok-er-a-kok-kok-kok-go-bach-gobak-goback*" by way of a pæan of victory and a challenge. Sometimes, flushed with victory, he will go further, and chase his enemy for a considerable distance. Occasionally, but rarely, three or four cocks have been all in á mêlée together. Whilst the fighting is going on the female runs round and round uttering a low clucking note by way of encouragement, and finally rewarding the victor by strutting off with him! Each male, says Mr. Millais in his monograph, "that has succeeded in appropriating a female separates her to a distance of forty to a hundred yards from . . . the ground chosen as a mating-place. Here he stands upright, frequently calling '*uk-uk-uk*' or '*bec-bec-bec,*' lowering his wings, erecting his comb, and quivering the tail. . . . The female meanwhile crouches down beside him and remains immovable until another cock grouse accepts the challenge of the male and comes to do battle."

---

[1] *Bird-life of the Borders*, p. 208.

One is not surprised to find that the courting customs of the ptarmigan have been very little studied. The almost inaccessible haunts of this bird render observations of this kind extremely difficult, and only the most enthusiastic among ornithologists care to make the attempt. Practically all that we know of this aspect of the ptarmigan's life we owe to Mr. Millais. In his splendid monograph[1] he gives us the combined results of his study of the ptarmigan when courting, in Iceland and in Scotland. From this we gather that the general trend of events at this time closely resembles what obtains among the Grouse The males fight after the same fashion, and seek to attract the females by suddenly flying up and alighting, uttering the while loud croaks. These displays begin sometimes before the dawn, and last till about 10 A.M., to be resumed, in a more restrained fashion, as the shadows fall at evening.

---

[1] *The Natural History of British Game-Birds*

As touching the usages which prevail with the birds now under discussion, in the matter of the care of the young, much has been written; though in a great measure the various writers have but recorded the same facts.

This phrase "care of the young" must be allowed to cover the period of the preparation of the nest and the methods adopted for safe-guarding and brooding the eggs. Weather factors play an important part in governing the commencement of the nesting operations. Thus the capercaillie begins to lay in May, but on the higher ground not till June. The blackcock begins in April. Grouse eggs have been recorded in February, but the end of April to the middle of May must be regarded as the normal laying period, and even at this later date blizzards may destroy the eggs, as for instance in 1896, when so late as the third week in that month birds were frozen to death on their nests. Mr. Seton Gordon cites a case[1] where a full clutch had been laid but brooding had not begun when the storm swept over the land, covering the eggs deep in snow. More than a week later they were again exposed and successfully hatched out! Thus the conditions of existence seem to have conferred on the eggs of the Grouse a considerable power of resistance to cold. In other words, we see here selection at work on the unborn young rather than on the parents, since all embryos unable to resist a considerable degree of cold have been eliminated. The ptarmigan, as we would suppose, do not begin to lay till the end of May, and consequently brooding does not commence till June is nigh at hand.

---

[1] *Birds of Loch and Mountain*, p. 57.

While in the choice of a nesting-site our native Grouse—using this term in its wide sense—naturally display a certain amount of difference, due to individual idiosyncrasics or to local conditions, all nest upon the ground. The capercaillie sometimes, however, deposits her eggs in a nest amid the branches of a tree some 10 or 15 feet from the ground. Usually she selects a site at the foot of an old Scotch fir or larch, and occasionally in deep heather.

As with the Grouse generally, she alone incubates, and at the commencement of her sitting will commonly cover her eggs with pine-needles when going off to feed. As soon, however, as incubation has well begun, this precaution seems to be abandoned, which custom suggests that the act of covering the eggs is not primarily for concealment of the eggs. The young, on hatching, seem to break the shell across the equator, and the two halves are then cunningly placed one inside the other by the mother, though it is hard to see what advantage seems to be gained therefrom. Whether the remaining species of Grouse similarly cover the eggs, and in like manner dispose of the empty shells, there are no records to show.

The mortality among chicks seems to be abnormally high, though they have the best of mothers Even when the whole clutch of eggs is hatched it is rare to see more than three or four youngsters with her after the end of the first week. The rest have either succumbed to spring showers, or have been lost in the deep heather. The survivors, however, grow rapidly, and gain in strength with their increase in bulk.

It is curious that while the capercaillie has had to be reintroduced into Scotland, the black-grouse has never been even near extermination, though the grey-hen is said to be a bad mother, deserting her eggs on the slightest alarm ; and she is also charged with being lamentably careless in her choice of a nesting-site. Mr. Abel Chapman cites one or two instances in proof of this trait. In one case a nest was made in a bank thrown up to form a sheep-washing pool on a burn ; in another it was placed in a tuft of rushes adjoining a still: and she will often, he remarks, lay her eggs in a nest alongside a footpath where men and dogs pass daily. As to the care of the young, little or nothing has been recorded, but they seem to be abnormally slow in coming to maturity, for birds hatched in June are not full-grown till mid-September; even when nearly full-grown they are soon exhausted, so that if flushed two or three times they become so bedraggled as to be unable to fly. By mid-September the young cocks separate from the young grey-hens of the brood, and for a time lead a solitary life.

With the grouse and ptarmigan, on the other hand, though the duties of incubation are performed by the females only, the males render some assistance, at any rate in the care of the young. The female grouse sits close, both on the eggs and young, when danger threatens, as is shown by the fact that instances are on record where a sitting hen has allowed herself to be trodden on rather than rise and reveal her whereabouts Except she move, indeed, she is invisible, so perfectly does her coloration harmonise with her surroundings; and this is true also of the young, and of ptarmigan, as we shall show presently. Occasionally, however, a nervous bird will leave her eggs at the last moment, flying low, and soon alighting, when she runs a short distance and watches. The male, on the other hand, who has been keeping guard near his mate, flies far, repudiating his responsibilities. As soon as the young are hatched, however, he displays more courage. Mounting guard, he will fiercely attack a dog or sparrow-hawk, and has been known to fly straight at a man's head as if to strike, swerving off only at the last minute. Commonly both parents feign wounded.

The ptarmigan, like the grouse, is monogamous, and both parents display considerable anxiety for the young, yet in spite of this there is a considerable infant mortality. Many eggs and broods of young are destroyed by late snowstorms, and besides vicissitudes of climate, they have to contend with many foes. The golden eagle preys largely upon them, though he is an enemy from whom escape is possible, either by flight or by trusting to their protectively coloured plumage, which in

Plate 139

Ptarmigan (summer plumage) hiding from Hawk (see Plate 150)

By G. E. Lodge

G.E. Lodge

this species has attained a marvellous degree of perfection; for it is only by movement that their presence is betrayed, so closely does their coloration agree with the ground against which in times of terror they cower. A heavy toll is levied on their eggs by the common gull, which of late years has increased in numbers, while crows and ravens tax them still further. To avoid persecution from these enemies, some ptarmigan, at any rate, take the precaution to cover their eggs more or less completely when leaving the nest to feed; and Mr. Seton Gordon cites a case of a pair which had sought concealment for their eggs beneath the cover of a large stone. Possibly this represents the initial stage of a new nesting-habit, due to repeated robberies, for the eggs are less perfectly harmonised with their surroundings, and are readily detected by egg-stealing birds. How perfect is the resemblance between the sitting-bird and its surroundings has been demonstrated by the late E T. Booth, who made a special pilgrimage to the ptarmigan's haunts on the hills of Loch Rannoch After searching in vain for eggs, one of his dogs sat down, by accident, on a brooding bird, and so led to the discovery of the first nest, albeit he and two or three keepers had been sitting for more than an hour within a few feet of this particular hen![1] The second nest was found between the legs of the pony which had brought up the lunch. With amazing persistency this bird had remained on its eggs for several hours with the pony towering above her; and only disclosed her presence by flying off in a great flurry when a pannier strap fell on her back during the repacking of the luncheon-baskets at the end of the day! These two nests, and a third disclosed by the attempt of a terrier to seize a sitting hen, were the only nests discovered after a long and careful search by Mr. Booth and his helpers! The male keeps a jealous guard over the sitting hen, never straying far from her vicinity. If alarmed he circles round his mate, and finally alights on the top of some high rock, and there remains protesting. The hen commonly sits close, and will often allow the eggs to be taken from under her rather than move. At other times she will share in the alarm of her mate, and half runs, half flutters over the ground. At such times the male will run in front of her as if to check her flight, bowing his head solemnly up and down; meanwhile both birds keep up a mournful croak. When the young appear, the solicitude of the parents, if possible, is increased. Mr. Millais remarks that the female if flushed when with her brood, and they do not follow her at once, as is the rule, will fly straight away for about 200 yards, then shoot up into the air for about 20 or 30 feet, at the same time calling loudly "*ach-ack-ack,*" or "*ee-ack,*" to attract their attention So far no other observers seem to have witnessed this performance.

---

[1] E. T. Booth, *Catalogue of the Cases of Birds in the Dyke Road Museum, Brighton*, p. 59.

The young are exceptionally precocious even for game-birds, being able to fly at a few hours from birth. Even when no bigger than thrushes they will ascend and descend perpendicular slopes of several hundreds of feet with ease, accompanied by their parents, in the endeavour to escape some real or imaginary danger. And here, again, we have evidence of the severity of the incidence of natural selection, which has impressed its mark on both adult and young, on their coloration and their mode of flight, and on their instinctive action. The ptarmigan are, so to speak, the most "alive" of all the game-birds.

THE PHEASANT SUBFAMILY

[ORDER *Galliformes* FAMILY *Phasianidæ.* SUBFAMILY *Phasianinæ*]

PRELIMINARY CLASSIFIED NOTES

[F. C. R. JOURDAIN. W. P. PYCRAFT. A. L. THOMSON]

PHEASANT [*Phasiánus cólchicus cólchicus* Linnæus; and *P. cólchicus torquátus* (Gmelin).[1] French, *faisan*; German, *Edelfasan*, Italian, *fagiano*].

1. Description.—The pheasant is readily distinguished from all other British game-birds by the long, wedge-shaped, pointed, black-barred tail, and the large size of the face-wattles. The sexes differ conspicuously, and there is no seasonal change of plumage. (Pl. 140.) Length 35 in. [889 mm.]. In the male the crown is of a bronze-green, the rest of the head and neck dark green, with purple reflections. The scapulars, interscapulars, and all the under parts save the abdomen are of a golden orange colour. The feathers of the mantle (scapulars and interscapulars) are marked with concentric bands of buff, black, and orange-red, and tipped with purple-lake. The feathers of the fore-neck and breast are notched at the tip, and have terminal black margins. The lower back, rump feathers, and upper tail-coverts are red-maroon, glossed with purplish lake or oil-green, according to the incidence of the light. The mid-breast is of a dark purplish green. The tail feathers have an olive-brown tinge, and are barred with narrow, wide-set black bars, edged with rufous. The sides of the head bear large bare erectile face-wattles, covered with small fleshy, vermilion-red papillæ, and a further ornamental feature is produced by short erectile feather-tufts or "horns." The beak is white, and the legs are armed with spurs. The female has a much shorter tail, and is of a sandy brown, barred with black, the back and sides of the neck have a pinkish tinge and metallic purple or green margins; the mantle, sides of the breast and flanks are chestnut, with black centres and pinkish grey margins. The tail feathers are of a reddish brown, shading into sandy olive at the sides, and barred with buff and black. The juvenile plumage resembles that of the female, but differs in its duller hues, the upper parts being of a dull black relieved by loops of buff formed by the margins of the feathers. The under parts are of a pale buff, more or less conspicuously barred on the fore-neck with dull black. The vinous and chestnut tints of the adult female are wanting. The downy young has a patch of pale chestnut on the crown enclosed within a more or less distinct loop of greyish black, the free ends of the loop turned backwards. A patch of black marks the aperture of the ear, and is continued back as a short wavy line to the nape. The back is of a pale chestnut with a median band of dark chocolate on each side. The rest of the plumage is pale buff. The area of the future face-wattle is demarcated by a narrow line of bare skin. Pure-bred birds of this species are now almost, if not quite, extinct in these islands, and this owing to the introduction of, and interbreeding with, three other species, two of which are characterised by the presence of a white ring round the neck. The salient features of the males of these three species are as follows:—*P. c. torquatus*, with the lower back, rump, and upper tail-coverts bluish slate colour, and a rust-coloured patch on each side. *P. c. mongolicus*, with a very broad white ring, interrupted in front, white wing-coverts, and the lower back, rump, and upper tail-coverts maroon or reddish bronze. *P. c. versicolor*, differing from *P. c. torquatus* in having no white ring and the whole of the under parts dark green; and the mantle dark green shot with purple, each feather marked with concentric lines of buff. [W. P. P.]

---

[1] Practically all our British pheasants are mongrels, owing to the introduction of many different forms which have interbred, until the true *P. colchicus colchicus* has disappeared.

2. **Distribution.**—The pheasant has been naturalised in England from a period before the Norman invasion, and, according to tradition, it is to the Romans that we owe its presence among us. It is found in a semi-wild condition in nearly every part of England, and locally in Wales; but in Scotland, though artificially reared in many places, it seems only to thrive in a wild state in Perth, Forfar, Wigtown, Aberdeen, and Moray, though it has been introduced even to the Outer Hebrides. In Ireland it breeds in every county. Its original home seems to have been Asia Minor and Transcaucasia, but it has been wild for centuries in Corsica, and the Balkan Peninsula is probably within its natural range, while it has been introduced into nearly every European country as well as into America. In modern times so many forms have been turned down, in order to introduce fresh blood, that the old race has died out almost altogether. *P. colchicus torquatus*, of which most of our birds now show traces, is a Chinese race, inhabiting Central and South China, and was introduced early in the nineteenth century. Of late years *P. c.*

versicolor (from Japan) and *P. c. mongolicus* (from Mongolia) have been largely imported, and have bred freely with our native stock. [F. C. R. J.]

3. **Migration.**—This long naturalised but often semi-domesticated bird is resident and stationary. [A. L. T.]

4. **Nest and Eggs.**—The ordinary nesting-place is a shallow depression in the ground scratched out by the hen in a wood or hedgerow, or under shelter of bushes and rank vegetation. Many instances have been recorded at different times in which this species has nested in trees, sometimes in old squirrel's dreys, or nests of wood-pigeon, sparrow-hawk, longeared-owl, or other bird, and frequently eggs are found in the nests of other species, such as wild duck, shoveler, partridge, and even woodcock. There is a scanty lining of dry grass, dead leaves, etc., brought together by the hen. (Pl. LXI.) The eggs are 8 to 14 in number, but as many as 22 may be found in a nest, probably the produce of more than one hen. Normally they are uniform olive-brown in colour, varying to some extent in depth of tone, but pale blue eggs are also occasionally met with, though usually regarded by breeders as a sign of degeneracy. Average size of 35 eggs, 1·81 × 1·41 in [45·9 × 36·0 mm.]. As a rule incubation is performed by the hen alone, although several instances of males incubating have been recorded. The incubation period is about 23 to 24 days. In the south of England the first eggs are picked up at the beginning of April, but not till the latter part of that month in the north, and from that time onward through May and June, though only a single brood is reared in the season. [F. C. R. J.]

5. **Food.**—Grain, seeds, fruits, berries, acorns, beech-mast, roots, spangles of oaks containing eggs of the gall-fly, caterpillars and other insects, slugs, earthworms, vipers, mice. The young feed on insects, ants' "eggs" and larvæ, and are accompanied in their search for food by the female. [W. P. P.]

PARTRIDGE [*Pérdix pérdix* (Linnæus); *Pérdix cinérea* Latham. Paitrick or paitrich (S. Scotland). French, *perdrix grise*; German, *Rebhuhn*; Italian, *starna*].

1. **Description.**—The common-partridge is to be distinguished at all ages by having the tail composed of eighteen feathers of nearly equal length. There are slight seasonal changes of plumage, and the sexes differ slightly in coloration. (Pl. 142.) Length 12·5 in. [317·5 mm.]. The adult male is of a brownish buff colour above, with narrow, close-set wavy cross-bars of black, while the scapulars, lesser and

median wing-coverts, are blotched on their inner webs with chestnut; further, the wing-coverts have a conspicuous longitudinal buff shaft-streak. From September to June the top of the head is brown narrowly striated with buff, the rest of the head and throat being of a bright rust-red. The breast and flanks are pale grey, finely mottled with black, and barred, on the flanks, with chestnut, while a large horseshoe-shaped patch of chestnut marks the centre of the breast The rest of the under parts are whitish. The first flight feather is rounded at the tip. A small area of red skin surrounds the eye, the beak is of a blush-brown colour, the legs pale bluish grey, and the iris brown. In May this plumage is much faded, the chestnut colour almost disappearing. From June to September the male assumes a partial "eclipse" plumage, affecting only the head and neck. Herein the striations on the crown are conspicuous by their absence, while the neck is brown, with buff striations narrowly bordered with black. The rust-coloured area of the throat fades to pale rufous. Birds in this plumage in the autumn are sometimes mistaken for "forward" young birds, but may be distinguished therefrom by the rounded tip of the first primary. The female is to be distinguished by the brown hue of the head and neck, which are conspicuously striated with buff, and by the coloration of the lesser and median wing-coverts which are black, with wide-set somewhat wavy buff crossbars, in addition to the longitudinal shaft-streaks of buff The chestnut horse-shoe is smaller than in the male, or may be wanting. Like the male, the female assumes a partial breeding ("eclipse") dress in May, the feathers of the crown of the head and neck, and the forepart of the interscapular region being more or less completely replaced by black and buff marked feathers with a longitudinal buff shaft-streak, and subterminal buff spot. These feathers are retained till September. In the juvenile dress the general coloration is of a brownish buff striated on the mantle, fore-neck, and breast with pale buff longitudinal, black-edged shaft-streaks. The wing-coverts and scapulars are black with buff cross-bars and shaft-streaks, recalling those of the adult female. By October young birds resemble the adults, but may be distinguished by the pointed first primary. The young in down is of a greyish buff. The crown dark chestnut, the sides of the head yellowish, with a long loop of black, the ends of which are turned forwards. Down the back of the neck runs a black stripe, dividing at its base to run down on either side of the middle of the back; below this dorsal stripe runs a similar line which, at its hinder extremity, turns forward to form a short loop. Two striking variations of the common-partridge occasionally occur—a red and a grey. The red variety was at one time regarded as a distinct species, known as the mountain-partridge

(*Perdix montana*), or as the Cheshire-partridge. Herein the head and neck are of a bright rufous buff, and the rest of the plumage rich chestnut, some of the feathers of the upper surface, especially the wing-coverts, being usually more or less vermiculated with pale greyish or yellowish white and black. The quills are washed with the same chestnut tint. The sexes of this variety are indistinguishable. Every intermediate stage between the most typical red forms and normal examples of *P. perdix* is to be met with ; and examples have been procured in almost every county in England and Scotland. In the grey variety the forehead, superciliary stripe, chin, and throat are whitish, washed with very pale rufous, and the general colour of the rest of the plumage is clear grey, vermiculated with black. The horse-shoe patch on the breast is pale greyish brown, or pale chestnut colour. White and Isabelline varieties also occur, but are of less interest (W. R Ogilvie-Grant *in litt.*). [W. P. P.]

2. **Distribution.**—In England the grey-partridge is widely distributed, but has greatly diminished in numbers of late years in many districts, though still very numerous in the light sandy soils of East Anglia and some of our southern counties. It occurs in Anglesey and in Wales up to about 1200 feet, but is local in Scotland and confined to the straths and lowlands, avoiding the mountain ranges and moorlands. It is absent from the Outer Hebrides, and has only been introduced successfully to a few of the Inner Hebrides, while attempts to naturalise it in the Orkneys have proved failures. It breeds in every Irish county, but is not numerous, and tends to become scarcer. Outside the British Isles it is resident in Southern Sweden, and in Russia ranges to 66° in Finland, 64° in the Archangel government, and 58½° in the Urals. From these limits it is fairly general in the countries of the European plain, but in the Pyrenees and Northern Spain is replaced by a closely allied race. Eastward it ranges to North Italy, the Balkan Peninsula south to Thessaly, and South Russia. In Asia it is found in parts of Asia Minor, the Persian highlands, and Siberia to the foot of the Altai range, but farther east it is replaced by other forms. Although sedentary in the British Isles, it is subject to migratory movements on the Continent, especially in South-eastern Europe. [F. C. R. J.]

3. **Migration.**—Resident, but not altogether stationary although there is no evidence of any regular British movements. Coveys have been seen to cross the Solway Firth "from the slopes of the Dumfriesshire hills to the well-cultivated lands of the Cumbrian plain" (cf. Macpherson, *The Partridge*, 1893, p. 8). There are also records of birds which have apparently crossed the English Channel, but probably accidentally (cf. Ticehurst, *B. of Kent*, 1909, p. 387), and of examples

obtained at the Irish light-stations (cf. Ussher and Warren, *B. of Ireland*, 1900, p. 233). The species has also occurred on Heligoland (cf. Gätke, *Vogelwarte Helgoland*, Eng. trans., 1895, p. 443), but it is altogether more decidedly migratory on the Continent. [A. L. T.]

4. **Nest and Eggs.**—The nest is placed in a depression scratched out by the hen, in a hedgerow, under shelter of a bush, or among grass on a bankside, as a rule; but occasionally it breeds on stacks, and has been found nesting in ivy twelve feet from the ground The only lining to the nest consists of a little dead grass and dead leaves, with which the eggs are covered during the absence of the hen. (Pl. LXI.) The eggs, as a rule, range from 10 or 12 to 20 or so in number, but at times large clutches of 30 to 40 eggs are met with, which are due to more than one hen laying in the same nest. In colour they vary from olive-brown to greyish olive, but occasionally blue eggs, or eggs with a blue band, are found. It is not uncommon to find partridge's eggs in the same nest as those of other species, such as the red-legged-partridge, pheasant, etc. Average size of 90 eggs, 1·38×1·05 in. [35·2×26·8 mm.]. Incubation is carried on by the hen alone, the cock keeping guard close at hand, and as a rule lasts for 24 days (Evans and Heinroth), some eggs not hatching till the 25th day: Saunders, however, gives the period as 21 to 23 days. As a rule the first eggs are not laid till late in April, but there are a few records of full clutches early in the month, though the average date when incubation begins is the middle of May for England, and a week or two later in the north. Only one brood is reared in the season, but if the first clutch is destroyed, the second laying may be delayed for a month or so, and eggs have been seen in September and October. [F. C. R. J.]

5. **Food.**—The young shoots and leaves of grass and clover form the staple diet; but the tender shoots of heather, bramble, and blaeberry are also eaten when they are to be had. In the summer spiders, grasshoppers, beetles, ants, flies, the pupæ of the crane-fly, and aphides are greedily eaten. The young feed on insects and their larvæ, and are accompanied in their search for food by both parents. [W. P. P.]

REDLEGGED-PARTRIDGE [*Cáccabis rúfa* (Linnæus). French partridge, Frenchman, red-leg. French, *perdrix rouge*; German, *Rothuhn*; Italian, *pernice*].

1. **Description.**—The adult redlegged-partridge may at once be distinguished by the pale grey flanks which are conspicuously barred with black, white, chestnut-

Photo by F. B. Kirkman

Partridge nest with eggs covered

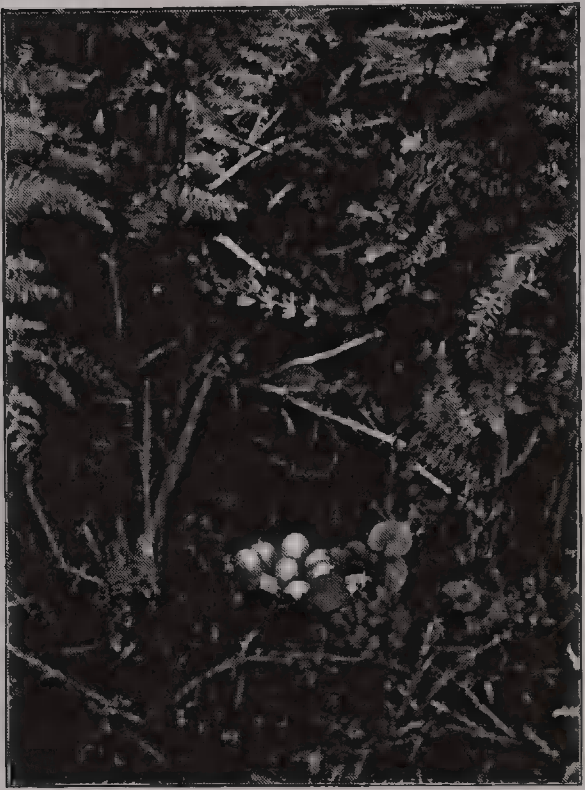


Photo by F. B. Kirkman

The same with covering removed to show eggs

Photo by F. B. Kirkman

Pheasant on her nest

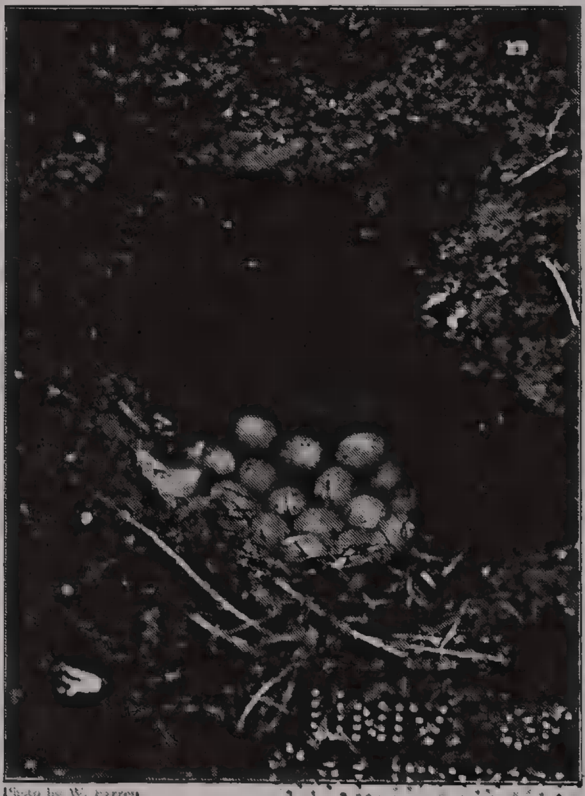


Photo by W. Farren

Red-legged partridge's nest and eggs

ied. The sexes are alike, and there is no seasonal change of coloration. (Pl. 141.) Length 13·5 in. [331·46 mm.] The crown is grey, bounded on either side by a conspicuous white superciliary stripe. A black band runs from the base of the beak to the eye, and thence backwards and downwards to form the boundary of a white throat. The whole of the upper parts, save the crown, are of an earth-brown colour. The fore-neck and fore-breast are rufous spotted with black; the breast and flanks are pale lavender-grey, the latter barred with chestnut-red, black, and white, while the rest of the under parts are of a rich buff. The bare skin round the eye, the beak, and legs are of a bright coral-red. In the male the legs are armed with one or two pairs of blunt, tumid knobs or spurs. The juvenile plumage differs conspicuously from that of the adult, and bears no resemblance to that of the common-partridge of the same age, striations being conspicuous by their absence. The interscapulars are of a uniform dark, greyish brown, the scapulars greyish brown with a subterminal bar of black, and a spot of white at the tip of the shaft. The head and neck are of a dirty buff colour, the fore-breast greyish brown, with a white spot at the tip of each feather. Tail feathers brown mottled with black. The downy nestling may at once be distinguished by the pale chestnut colour of the crown, and the presence of a median and two lateral longitudinal stripes of dull buff, on a background of chestnut mottled with black. [W. P. P.]

2. **Distribution.**—This is an introduced species in the British Isles, and was first acclimatised in England about 1770 in Suffolk. Since then it has increased its range considerably, and is now common in East Anglia and the counties of the English plain, penetrating to the Welsh coast on the west side, and the counties bordering the Channel on the south, but only a straggler to the Devonian Peninsula. Northward it is local in Yorkshire, Derbyshire, and Staffordshire, and has failed to establish itself farther north, but has recently been introduced in Elgin. On the Continent it is scarce in Northern France, and very rare in Belgium except in the hills. In Switzerland it occurs in the Jura and Wallis, and is common from Central and Southern France south to Andalucia, but the Spanish race, as well as those from Corsica and Madeira, have been separated subspecifically. Its presence on the Azores and Canaries is perhaps due to introduction, but it occurs in the Balearic Isles, and also in parts of North-west Italy. [F. C. R. J.]

3. **Migration.**—The introduced stock is resident and stationary; but there is some evidence of a slight cross-Channel immigration to the south-east of England (cf. Ticehurst, *B. of Kent*, 1909, p. 388). [A. L. T.]

4. **Nest and Eggs.**—Like its relative, this species scratches out a hollow

in a hedgerow or under shelter of a bush, often on the top of a bank, and lines it carelessly with a little grass or a few dead leaves. A good many nests have been recorded on the tops of stacks of straw, oats, etc. Apparently the nest is the work of the hen alone. (Pl. LXI.) In it she lays, as a rule, about 10 or 12 to 18 eggs, occasionally as many as 20, which vary in ground-colour from yellowish or buff to a warm rufous tint, speckled with fine red-brown spots and a few irregular blotches of purplish or reddish brown. Average size of 53 eggs, 1·59 × 1·21 in. [40·5 × 30·8 mm.] Incubation is performed by the hen alone, and, according to Mr. W. Evans's experiments, lasts 23 to 24 days. The laying season begins slightly earlier than that of the grey-partridge, the first eggs being laid in the south of England during the latter part of April, sometimes not till May, and a week or two later in the north Midlands. Only one brood is reared during the season. [F. C. R. J.]

5. **Food.**—As common-partridge. [W. P. P.]

QUAIL [*Cotúrnix cotúrnix* (Linnæus); *Cotúrnix commúnis* Bonnaterre. Wet-my-lip, wet-my-feet, but-for-but (Cheshire). French, *caille*; German, *Wachtel*, Italian, *guaglia*].

1. **Description.**—The common-quail may readily be distinguished by its small size, sandy coloration, and the median buff longitudinal stripe on the crown. (Pl. 143.) Length 7 in. [177 80 mm.]. There is no seasonal change of plumage, and the sexes slightly differ in coloration. In the male the feathers of the crown and nape are black, tipped with pale brown, and down the centre of crown runs a band of buff, and there is a similarly coloured superciliary stripe. The interscapulars are black with irregular transverse bars of pale brown, and dull white shaft-streaks; the hindmost feathers have their tips powdered with grey; the scapulars are pale brown with lanceolate, dull white, black-bordered shaft-streaks, and barred and blotched with black and buff. The wing-coverts are pale brown, with buff shaft-streaks and transverse bars, while the quills are brownish grey having the outer webs transversely barred buff. The tail feathers are dusky, with buff shaft-streaks and transverse bars, their coverts black, with shaft-streaks and transverse bars of buff. There is a black malar stripe, and the throat is white marked with a black, inverted anchor, variable in size. The fore-breast is of a pale chestnut with buff striations; the flanks greyish brown, with black-margined buff striations and black bars and blotches on the outer webs; the abdomen is pale buff. The female differs from the male in having the black of the upper parts duller. The throat is

of a pale uniform buff, lacking the black anchor. The rest of the under parts are of a similar buff hue, tinged on the flanks with rufous; the flank feathers further have buff shaft-streaks and marginal black spots. In the juvenile fledgling plumage the upper parts are heavily striated with dull white, and barred with black on a buff ground. The fore-breast and flanks are of a pale buff, with very narrow, hairlike, white shaft-streaks, and a pair of subterminal black spots on each web. The young in down is buff-coloured, tinged with rufous on the crown and lower back, which are relieved, as to the crown, with two black longitudinal stripes, and as to the back with a median and lateral black stripe. [W. P. P.]

2. **Distribution.**—Formerly this species was much more plentiful as a summer resident than it is at the present time in the British Isles, partly owing to changes in the country and partly to destruction at migration periods. It haunts rough pastures as well as cultivated land, and is now chiefly met with in the southern counties of England and the eastern half of Ireland. At intervals it has appeared in greater numbers than usual, but on the whole the tendency is steadily to diminish. Although it becomes scarcer in the north, it has been recorded as breeding on the Orkneys, Shetlands, Fair Island, and the Outer Hebrides, and was formerly abundant and widely distributed in Ireland. Outside the British Isles it has bred in the Færoes, and on the Continent it is found on the low ground in Norway up to Trondhjemsfjord, and in South Sweden regularly, up to lat. 65° in Finland, and to the White Sea and lat. 60½° in the Urals. From these limits southward it is found throughout the Continent in suitable districts south to the Mediterranean and Black Seas. It also breeds in the islands of the Mediterranean as well as in North Africa, but the form which occurs on the Atlantic isles (Azores, Canaries, Madeira, etc.) is apparently that which inhabits Central and Southern Africa. In Asia it is found in W. Siberia, north to lat. 61° on the Yenisei, and east to Lake Baikal, as well as in South-west Asia (Asia Minor, Persia, Afghanistan, and occasionally even in India), but in Eastern Asia and Japan it is represented by an allied form. The winter range extends in some cases to the Cape, Madagascar, and Mauritius, as well as to the shores of the Indian Ocean, but many birds winter in the Mediterranean region, and exceptionally even in the British Isles. [F. C. R. J.]

3. **Migration.**—Chiefly a summer visitor in very variable numbers, and with a rather variable and local breeding distribution. Some frequently remain in parts of our area during the winter; and there may possibly be a slight passage to and from countries farther north. Up till the middle of last century the quail was abundant and partially resident in Ireland, but since then its numbers have

undoubtedly diminished (cf. Ussher and Warren, *B. of Ireland,* 1900, p. 234). But both in Ireland and Great Britain the stock is temporarily increased by occasional exceptionally great spring immigrations: the seasons 1870, 1885, 1892, and 1893 may be specially mentioned (cf. Saunders, *Ill. Man. B. B.*, 2nd ed., 1899, p. 505; and Forrest, *Fauna of N. Wales,* 1907, p. 314). The spring immigrants arrive about the second week of May (cf. Ticehurst, *B. of Kent,* 1909, p. 391), and the majority leave in or before October. A gregarious and at least partially nocturnal migrant: flocks of immense size occur in the Mediterranean countries, especially in spring, and, "as of old in Sinai, multitudes come up in the night and cover the land" (Saunders, *loc. cit.*). [A. L. T.]

4. **Nest and Eggs.**—The nest hollow is scratched out by the hen among growing crops or grass, often among clover or lucerne, and is lined with grasses and stalks. The eggs vary a good deal in appearance, but have generally a yellowish white or stone-coloured ground. Sometimes the markings consist of innumerable small umber-brown spots; at other times there are a few blotches of deep sepia, and some eggs have the ground almost hidden by numerous large blotches of rich blackish brown. As a rule they range in number from 7 to 12 or 14, but clutches of 15 and 16 have been recorded, and Leverkuhn mentions a nest of 26 eggs, probably laid by two birds. Average size of 50 eggs, 1·14× 88 in. [29·1×22·4 mm.]. Incubation is performed by the hen alone, and is stated by several authorities to last for about three weeks, though Thienemann gives 18 to 20 days. It is, however, worth noting that other species of this genus, whose incubation period has been accurately observed in captivity, hatched out in 16 to 18 or 19 days, the male deserting the female as soon as incubation had begun and seeking another mate. In England the eggs are not laid till late in May, the full clutch often being not completed till mid-June, while in Scotland they may be found in July, and exceptionally even in September (Saxby). Saunders states that two broods are sometimes reared in the season, and partly fledged young have been met with in Yorkshire in September. Possibly the second broods may be reared by birds which have wintered with us, and reared their first hatch early in the season. [F. C. R. J.]

5. **Food.**—As the common-partridge. [W. P. P.]

The following species, which is of doubtful occurrence, is described in the supplementary chapter on "Rare Birds":—

Andalucian bush-quail, *Túrnix sylváticus* (Desfontaines). It is placed in the suborder *Turnices,* family *Turnicidæ.* [F. C. R. J.]

THE PHEASANT

[W. P. Pycraft]

The pheasant such as most of us are familiar with to-day is like the "American"—a mixture of many types. The true "American," claiming descent from the Pilgrim Fathers, has been swamped by a medley of races from many lands. Similarly, *the* pheasant (*Phasianus colchicus*) has lost its identity, so far as these islands are concerned, by the introduction of alien species which, interbreeding with the ancient stock, have transformed it beyond all recognition. It is not within the scope of the present work to trace out in detail how this process of transformation has taken place, or to describe minutely the various species which, from time to time, have been "turned down" into our coverts, for these, at any rate, are *not* British birds. It is a moot point, indeed, whether even *the* pheasant, *Phasianus colchicus*, is entitled to this rank. According to some, this bird was introduced with many other excellent things by the Romans. Others aver that it is an indigenous species, and this because fossil remains of a pheasant have been found not only as far south as Greece, but also as far west as France. Now, as Great Britain so late as Pleistocene times formed a part of the mainland of Europe, it is quite possible that this bird may have accompanied the elephant, rhinoceros, cave-bears and lions, and many other species long since extinct not only on our soil but in Europe. But be this as it may, even if introduced by the Romans we may fairly claim for it the rank of a British bird; indeed many of its most zealous guardians are satisfied, in claiming British nationality, with a pedigree which goes no farther back than 1066: few of us can do even this. From the remotest periods of our history the pheasant has been regarded with singular favour, and rightly so: the strong arm of the law has always guarded its safety. In Saxon times even a limit was put on the number which might be slain.

During these early days, however, the pheasant must have been a comparatively rare bird, and hence the care expended on its preservation Its capture was possible only by snares, nets, the cross-bow, and by hawking. The introduction of firearms gradually, and materially, changed the conditions of existence, and, incidentally, has done much to rob us of many of our finest and most interesting birds Greater facilities of killing has slowly bred what it is no exaggeration to call a lust for killing, which overrides all other considerations. To ensure huge "bags" the noble falcons, eagles, buzzards, hawks, owls, jays, and magpies have been, and are, ruthlessly slaughtered—branded with the odious name of "vermin" The generous instinct of the "sportsman" has become poisoned by the overmastering desire to make record bags. Hundreds of thousands of birds are now reared annually, under artificial conditions—hatched under domestic hens, and in incubators—to be turned adrift at a fitting time to make "sport." Most emphatically we agree with the protection of this most valuable bird, but we cannot suppress a regret, that at times becomes indignant, that it should have been considered necessary to press protection to such inordinate lengths.

There is a general impression abroad that the pheasant of the English coverts of to-day is a semi-domesticated bird, that the killing thereof is much on a par with shooting barn-door fowls! This is not the experience of those who rear and shoot them. In spite of the purple period of its early life the pheasant remains unspoiled; retaining all the ancestral love of seclusion, and dislike of the haunts and ways of men; wherein it agrees with its congeners the Grouse and Partridges.

In the selection of its haunts, as in its physical characters, it differs conspicuously both from the Grouse on the one hand and the Partridges on the other. As regards its physical characters, one of its most striking peculiarities, as compared with the types just mentioned, is afforded by the covering and armature of the feet, or, as many would say with less accuracy, of the "legs." In the first place these,

Plate 140

Pheasants; cock and two hens

By A. W. Seaby

unlike those of the Grouse, are ensheathed in symmetrically disposed horny plates, and are not feather-clad. In the second, these feet, in the male at any rate, are armed with formidable spurs. Then the sides of the head are ornamented by a large featherless patch of skin, brilliant vermilion in colour, and covered by little fleshy papillæ forming a sort of velvet pile. In the Grouse tribe a similar patch of skin surmounts the eye, while in the Partridge bare skin is restricted to a small region around the eye, red in colour, but devoid of the papillæ. Finally the tail of the pheasant is of a characteristic V-shape, differing conspicuously from that of the Grouse family.

Although some no doubt would have it otherwise, it is doubtful whether the coloration of the pheasant has been in any way determined by the bird's environment. And this view need not affect what has been said in regard to the ptarmigan in this respect. Very well. Before proceeding further it will be best, perhaps, to state that in this place we propose to speak simply of "the pheasant" as though our coverts were tenanted by a single pure species, for these pages are devoted to an account of "British Birds," and it would therefore be foreign to the purposes of this work to treat of species imported since the end of the eighteenth century as though they were entitled to rank as members of our avifauna. Nevertheless, it will be necessary to say something of these birds in order that we may understand the process of transformation which has overtaken "the pheasant" as we know it to-day in these islands. To begin with, then, the parent stock of the present tenants of English coverts is, or was, "the old English pheasant," *Phasianus colchicus*, a bird which, whether indigenous to these islands or introduced by the Romans, must be regarded as an undoubtedly British bird. Pure-bred examples of this species are not now to be met with in Great Britain, and must be sought for in Southern Turkey, Greece, and Asia Minor as far east as Transcaucasia; and it extends northwards to the Volga.

The precise date of the introduction of the Chinese ringed pheasant, *P. torquatus*, and of the Japanese pheasant, *P. versicolor*, cannot be determined, but we may reckon it from the end of the eighteenth century. The pheasant as we know it to-day is a blend of these three species, the ring-necked being the dominant element. The wild parent species of this bird ranges from the lower Amoor, Manchuria, Corea, Japan, and Eastern Mongolia through Northern and Eastern China as far south as Canton. The Japanese pheasant, *P. versicolor*, as its name implies, is confined to Japan, though not met with in Yezo. It is decidedly the smallest of the three, but is an extremely handsome bird, and hybrids between this and the Chinese pheasant are remarkable both for their great size and singular beauty.

During the last few years yet other species have been turned down, of which especial mention may be made of the Mongolian pheasant, since this may now be regarded as established among us, at any rate locally. It is a very handsome bird, and of large size. Its most striking features are the great width of the white collar, which is interrupted in front, and the large area of white in the wings, formed by the wing-coverts. The mantle and breast are of a bronzy-orange-red shot with purple-carmine and green, according to the incidence of the light, while the rump is of a deep maroon, glossed with green and purple. Little seems to be known of its habits in a wild state, and this on account of the remoteness of its haunts, which range, as Mr. Ogilvie-Grant remarks, from the valley of the Syr-Darya across the basin of Lake Balkash as far east as Lake Saisan and the valley of the Black Irtish, and southwards to the valley of the Ili and Issik Kuhl.

Inasmuch as the pheasants can be interbred with wonderful facility, and since species whose ranges overlap interbreed freely in a wild state, it has been contended, and there are some who still contend, that what most of us regard as good species are only entitled to subspecific rank. But this argument is not valid, for the same readiness to interbreed is displayed by the Anatidæ, and few people, we imagine, would contend that the mallard and pintail, for example, were but subspecifically distinct! On this theme, however, no more need be said. Bearing in mind, then, the composite character of the pheasant as encountered in Great Britain, we may proceed to discuss its habits.

What we may call the parent species of the pheasants of these islands are in their choice of haunts alike; and hence the blend which now makes our pheasant has not been hampered by a conflict of ancestral emotions in its choice of haunts. While they by no means shun the immediate neighbourhood of man, foraging in gardens and shrubberies where such adjoin a safe retreat, they thrive only in country affording thick plantations of oak, hazel, or fir, or a mixture of these, with plenty of undergrowth and long grass, when the soil is sandy and well watered by streams or pools. But they display a stronger partiality for areas covered by reeds and long grass in the neighbourhood of rivers, such being the haunts of the species in a wild state: and where such cover is to be had with us they will forsake the plantations dedicated to their use. Spending most of the day upon the ground, and wandering outwards from their coverts in search of food, they fly but seldom. The homeward journey to roost, however, is made on the wing. Though incapable of sustained aerial journeys, they travel fairly fast, attaining a speed of about thirty miles per hour, though, at need, a considerably higher rate is possible. Nor do they travel high, rarely mounting more than a hundred feet. On alighting they run a short distance, then take their bearings. That their powers of turning swiftly when on the wing are limited is shown by records of birds which have been killed by collision in mid-air. That the pheasant is a bird of relatively limited powers of flight is manifest from the shape of the expanded wing, which is short and rounded. And the correctness of this inference is attested by observations made by the late John Cordeaux, Mr. Millais, and Mr. Donald Campbell. The name of John Cordeaux will be known to all who are interested in ornithology, and probably many will remember the case which he recorded of two hen pheasants which he shot as they landed on the Lincolnshire side of the Humber, near Grimsby, after having flown over from Yorkshire, a distance of four miles. This must have been a very exceptional flight indeed, judging by the two following instances. Just twenty-two years ago, Mr. Millais tells us, he was shooting at Foyers, Loch Ness, when three pheasants took wing from the south side of the loch, and attempted to cross the lake, which at this point was about a mile and a half wide. The birds rose to a considerable height, and then, after having flown about three-quarters of a mile, all alighted on the water, when they turned round and began to swim shorewards, but were captured from a boat. A precisely similar occurrence was witnessed by Mr. Donald Campbell.[1] Shooting at Dunstaffnage, Oban, he saw five cocks and a hen attempt to fly across Loch Etive, necessitating a flight of at least half a mile. When about half-way across one of them was seen "to fall, or alight, on the water, and its example was immediately followed by the other five. Fortunately the son of the Ardchattan gamekeeper, who was in a boat on the loch at the time, observed the occurrence, and rowed to the spot; but as he had some distance to go, by the time he reached the birds they were very much exhausted and half drowned, and were drifting with the tide. He got them into the boat and took them ashore, and, after being well dried and placed in warm boxes near a good fire, they all eventually recovered." Be it noted the day was cold and frosty, and there was a slight fog on the water. We call attention to the weather conditions because cases too numerous to quote are on record which show that the pheasant, from the chick onwards, will take to the water readily, at need, and swims well. One or two illustrations of this rather striking fact may, however, well be given. In one case a hen pheasant with her brood was flushed. She flew across a pond about nineteen feet wide and four feet deep Immediately the young scattered, but one, not more than fourteen days old, ran down to the water, entered it without hesitation, and swam safely across. In another, a cock was seen to cross the Usk. Alarmed by a fisherman, "he quietly took to the water like a duck, and, swimming high and with great ease, reached the bank nearly opposite to the spot whence he set out." The stream at this point was running at the rate of about four knots an hour.

---

[1] Tegetmeier, *On Pheasants*, p. 12.

Bearing these facts in mind, it is obvious that the pheasant is a bird whose hold on life, as a species, is dependent on the stability of its food-supply. Any marked change in the conditions of its immediate environment must spell extinction, migration being impossible. Under the circumstances it is not surprising to find that the pheasant is an omnivorous feeder. The seeds of weeds, young clover, grass, roots, especially of the ranunculus, peas, beans, wild fruits and berries of all kinds, acorns, and beech-mast, form their staple diet, while animal food is furnished by ants and their larvæ, wire-worms, grubs of the crane-fly, caterpillars even of the hairy species, and other insects, snails, and slugs and worms. They have, however, discovered sources of supply in the nature of animal food which are not generally known. Thus, as was discovered some years ago by Mr. Carr Ellison,[1] in the autumn they search greedily for the fallen spangles of the oak, which contain the larvæ of the gall-fly (*Neurotrerus lenticularis*). To these may be added the slow-worm, the viper, field-voles, and mice

So readily, indeed, is food obtainable, that were it not for its enemies it is certain the pheasant would become flightless. But both in a wild state, and in the state of semi-domestication in which it lives in these islands, it has many enemies, of whom, in this country at any rate, man himself is chief, even while he sternly represses all other agents of destruction. Among its foes, after man, are, or rather perhaps were, foxes, cats, and other carnivores, rats, birds of prey, and egg-eating birds like jays, magpies, and the rest of the Crow family. The avoidance of these is the factor which has driven it to roost in trees, and on the part of individuals, perhaps, to nest in trees, for many instances of such resorts for a nursery are on record. It is significant in this connection to note that young birds, till half-grown, always roost on the ground.

---

[1] Tegetmeier, *On Pheasants*, p. 18.

Having now briefly outlined what we may call the daily round of the pheasant's life, we may turn to that which concerns the reproductive period. There can hardly be any doubt but that this bird is naturally polygamous, though Mr. Ogilvie-Grant and others are inclined to believe that polygamy is a result of the artificial conditions of existence caused by the deliberate slaughter of males, a policy dictated in the interests of sport. It is true that among the semi-domesticated birds of our coverts, instances of monogamy are by no means rare, the male guarding the hen while brooding, and even taking a share in incubation ; and there are many instances of dogs and men being attacked by cocks at such times. Cocks have also been seen attending broods of young. But the contention that the males, in a wild state, remain with the females during the period of incubation, and later take part in rearing and protecting the young, lacks confirmation. Courting begins at the end of March, when the smouldering fires which are to burst forth immediately in strange antics begin to manifest themselves in a more mincing, yet stately gait, the tumescence of the bare skin over the face, and the raising of the "ears" which at other times of the year are lost to view in the general plumage of the head. When displaying to the female of his choice, the wing nearest her is dropped. the scapulars of the same side are drawn down, the tail is spread and twisted sideways towards her, the rump feathers are raised, the head and neck are bowed earthwards, and turned so as to display to the fullest advantage their gorgeous colouring of vermilion and metallic blue and green. Meanwhile, the female walks coquettishly away, or pecks about in apparent unconcern. He then walks round her and displays the other side in a similar fashion, until at last, not so much because of his persistence, as because by now the female herself has become amorous, he is rewarded for his seductive advances. Be it noted there is no meeting of parties of rival males as is the case among the Grouse tribe: such as do meet engage at once in conflict likely to be serious, for the spurs wherewith the feet are armed are formidable weapons. During such contests the combatants fight after the fashion of game-cocks, with lowered heads, a spring into the air, and a swift, vicious, downward plunge of the spurs. Such combats are rarely fatal, yet the males seem to behave with peculiar savagery towards their mates, spurring them on the back till it is literally torn to pieces: sometimes the wretched female is killed outright by a sudden thrust of the spur into the back of the skull. Curiously enough, the hens sometimes fight with one another during the spring, and the cause of the quarrel may be readily guessed. Mr. Millais has remarked that during the spring the males utter a crooning or chuckling note wherewith to call the females to partake of some special tit-bit he has discovered, and over which, till her arrival, he stands with lowered head and feathers all on end. The state of nervous exaltation which possesses the males at this season is demonstrated by the challenges which distant males hurl at one another throughout their waking hours, making the woods resound with a peculiar and strident "*koch-koch*" uttered two or three times in quick succession, and followed by a flapping of the wings. This wing flapping recalls the like accompaniment to the crowing of the barn-door cock, but in this case the crow precedes, instead of follows, the flapping. But thunder, bands, distant explosions, or indeed any loud noise will, at any time, set all the cock pheasants in a wood calling.

As in the case of the Grouse tribe, there is a second period of display in the autumn, but this is of short duration, and lacks the fire of the spring performances. Curiously enough, the young males begin to fight among themselves in September, and such mock combats, for such we must suppose they are, are continued on into October and November, when they are full grown. Thus, then, the courtship of the pheasant bears no likeness, in its happenings, to that of any of the Grouse tribe, which have traditions of their own among the game-birds.

As soon as the full clutch of eggs is laid, the male retires and leaves the work of brooding entirely to the female, who has the reputation of being if not a bad at least an indifferent guardian. And this fact tells heavily on the chicks, for, if alarmed, she flies off and leaves them to their fate. Returning later, if she recovers two or three of her brood she is content; the rest of necessity perish. Yet, while incubating, she bestows some evidence of care, since, on leaving the nest in the morning and evening for food, she will cover the eggs with leaves, and takes the precaution to quit and return to the nest on the wing so as to leave no tracks. She has a curious habit, Mr. Millais tells us, on leaving the nest after having first laid an egg, of walking along and flicking bits of grass from side to side and over her back, a habit displayed also, according to Mr. Wormald, by wild duck and reeves. On the whole, however, the maternal instinct seems to be defective, since she will lay in nests made up for her by careful keepers, especially if one or two dummy eggs are added! A case was recorded in *Country Life*, 1907, of a female which was found sitting on a blackbird's nest in a low thorn bush. When found, two young blackbirds were discovered in the nest, and on the ground beneath were her own eggs, which had apparently fallen over the edge of the nest when laid, a fact unperceived by the bird! Pheasants eggs have also been found in deserted nests of owls, hawks, wood-pigeons, squirrels, wild ducks, corncrakes, capercaillie, grouse, grey-hen, and common-fowl. Two pheasants have been found sharing the same nest, and a pheasant and partridge have also been found practising copartnership. She will further often kill her young when hatched, as also will blackheaded-gulls, owls, and wild duck, but in these latter cases apparently only when the young are weaklings.

If it were not common knowledge that the young of game-birds have a longitudinally striped down-covering, the fact has been referred to with sufficient frequency in these pages to have impressed it upon the reader's mind. But there is an aspect of this coloration that may well be referred to here, especially as it is fraught with important consequences to species which, like the pheasant, display defective maternal instincts. This coloration, then, is certainly of a protective character, and in most young birds in which it appears seems to be all-sufficient. Not so in the case of the game-birds, however, which display an unusual precocity of flight. Considerations of space forbid me to enter into the possible origin of this, but I have discussed the theme elsewhere.[1] Let it suffice here to remark, that in the pheasant, at any rate, this precocious flight is harmful, at least on occasions of sudden alarms, such as temporarily deprive the female of her maternal sense. For the young, scattering in all directions, wander too far, and failing to find their way back perish miserably. It may well be that a similar condition of things in other groups of birds has gradually reduced these precocious powers of flight and perfected the instinct to squat down and trust to the protective coloration—*e.g* young Norfolk-plovers.

THE PARTRIDGES

[W. P. PYCRAFT]

Although the common or grey-partridge and the redlegged-partridge are both members of the same subfamily—*Perdicinæ*—they are not really so closely related as some would suppose, the redlegged species being more nearly allied to the *Francolins*. They certainly differ markedly in coloration when adult, though their structural differences are not so obvious. In the redlegged-partridge, however, among other things, the legs, at any rate in the male, are armed with an irregular series of blunt knobs of horny tissue, apparently answering to the "spurs" of the pheasant, for example. At best these can be but indifferent weapons of offence, and whether they are to be regarded as incipient or as vestigial spurs is a point which has never been investigated, or indeed attracted attention. An examination of one or two embryos might set this point at rest. No such excrescences occur in the grey-partridge. Nor have any observations been recorded as to the relative protective values of the plumage in these two species. Does the uniform brown colour of the upper surface of the redlegged species afford a more perfectly obliterative mantle than the low-toned variegation of our indigenous species? The similarity of the immature quail-like plumages of the two species is significant. But what interpretation is to be placed on the very marked differences which obtain between the eggs of the two species. Here is a matter on which the egg-collector should have something to say, but his reticence on this, and most other themes concerning eggs, save the numbers in a "clutch," is remarkable. Nothing that has so far been recorded of the life-history of the two species affords us any clue to these problems, but then, as a matter of fact, having regard to the jealous guardianship which is exercised over these birds, our ignorance of all that pertains to their life-history during the greater part of the year is incredible, and this fact will become at least tolerably apparent as these pages unfold their story.

---

[1] *A History of Birds*, p 244.

To begin with, the "common" or grey-partridge (*Perdix cinerea*) is an indigenous species; the redlegged-partridge (*Caccabis rufa*), on the other hand, is an alien. Some seem to have been introduced in the time of Charles II., at Windsor, but these seem to have perished About 1770 a number were turned down at Sudborne, near Orford, in Suffolk, and at Rendlesham near Sudborne. How these fared does not seem to be certainly known, but it would seem that this bird did not become much known till 1823, when it was introduced into Calford, near Bury St. Edmunds; and from that time onward this bird has held its own, at any rate in parts of England, and this in spite of repressive measures on the part of those who had taken so much trouble to establish the bird as a breeding species! These efforts at acclimatisation, be it noted, were made by a few keen sportsmen who procured eggs, it is generally believed, from France, and hatched them under barn-door fowls. From Norfolk and Suffolk, which are still its strongholds, this bird has gradually spread into the Midlands. It does not thrive, however, on the west coast, while the northerly confines of these islands prove still more uncongenial.

While the redlegged and the English species live side by side, as in East Anglia, the first named, as a matter of fact, does not prosper with cultivation like its cousin the grey-partridge, which decreases rapidly in numbers as it recedes from cultivated areas. Nevertheless, it is not dependent on what we may call artificial conditions for its well-being. And this because both on the breks and warrens of East Anglia, as well as on the slopes of our northern fells, coveys of partridges have established themselves time out of mind Here, even when remote from cultivation, these birds hold their own easily, though few in numbers So long have they been isolated that they may be distinguished by their smaller size and somewhat darker coloration. In the northern parts of the kingdom such birds are known as "hill" partridges and "fell" partridges; and from the fact that the food they get here is, in a great measure, like that of blackcock and redgrouse, their flesh is darker, when served at table, than the birds bred on highly cultivated areas According to most authorities, the ground whereon the partridge thrives best is that which affords a certain amount of waste-land or heather, which will extend a harbourage during tillage and the gathering of crops; a certain amount of grass, and cultivated land where the soil is light and loamy; and there must be a constant supply of water. Heavy clay soils are bad. In the first place they seem to harbour fewer insects, which are an important element in the partridge's diet; in the second they, in wet weather, hold the water, which forms pools, wherein the young drown, while during drought large cracks appear, down which more or fewer young may vanish. No better demonstration of the need of a certain amount of wild waste-land for the well-being of this bird can be found than that furnished by Mr. J. G. Millais,[1] who remarks that, in West Sussex "twenty-five years ago gunners used to kill seventy and eighty brace a day; now a bag of forty brace in the season is about the limit. Within the last ten years all the nice wild spots of furze common have been reclaimed; all the old-fashioned double hedgerows have fallen before the billhook; and the few partridges that are left nest by the roadsides, where predatory dogs and boys give them no peace, or in the clover-fields, where the cutting-machine destroys the nests in June. Two years ago I found ten nests in one clover-field thus destroyed." When such adverse conditions prevail, it is useless, as Mr. Millais remarks, to import Hungarian partridges, or to resort to artificial rearing

To the well-being of the redlegged-partridge access to waste-ground is even more essential; but there must be yet some other factor at work which has limited its distribution over these islands: and this limitation may account for the fact that it presents practically no variation in coloration, wherein it differs conspicuously from the common partridge—of course albinisms, and isabelline varieties, which are pathological phenomena, are not considered in this connection.

So far as recorded observations go, the habits of the two species are much alike; but information, especially in regard to the redlegged species, is by no means plentiful. The nature of the facts so far recorded are of a kind which rather bring out the differences between the two species than their common resemblances. While both species live in coveys, the redlegged-partridge is nervous and restless, by temperament, so that on alarm the covey, as if panic-stricken, breaks up and scatters, reuniting later, whereas coveys of the grey-partridge keep together. The last named, again, seek safety at once in flight; the former prefers to run, and is with difficulty flushed, a habit which forced itself upon the attention of sportsmen so soon as the bird had become well established. As a consequence

---

[1] *The Natural History of British Game-Birds.*

Plate 141

Peregrine-falcon and Redlegged-partridge

By G. E. Lodge

this experiment in acclimatisation brought with it a speedy repentance, owing to the adverse effect it produced on the dogs. So great, indeed, was the dislike finally provoked by the newcomer, that its eggs were destroyed as they were found, or on some estates were used for table purposes. Nevertheless these measures did not succeed in exterminating what was then regarded as a pest. A further charge levied against these aliens was that of pugnacity, a widespread belief having gained ground to the effect that the males drove away the native, grey, or English bird, which from every point of view would have been a deplorable event Time, however, has reinstated the redlegged species. The old methods of shooting over dogs have now given place to "driving," and this ultimately forces the laggards to fly, and furthermore inflicts a heavier toll on their numbers than in the case of the English bird. And closer observation has shown that, so far from the larger redlegged species driving out its neighbour, the reverse is the case, for the English partridge is decidedly the more pugnacious species.

The French partridge will often perch on fences, the low bough of a tree, or even on a barn or wall. The English partridge is commonly believed never to adopt such resorts; but according to Yarrell it will perch on the limb of some large tree if the ground be covered in deep snow. The French partridge, again, has been known to nest on haystacks, cornstacks, and even in a tree, and Mr. W Farren tells me he has known cases of nests placed far down in rabbit burrows; but such vagaries seem rarely to be committed by the English partridge, though a case is recorded in Daniel's *Rural Sports* of a nest of sixteen eggs on the top of an oak pollard, which were successfully hatched out. The English partridge will bathe occasionally, and both species are exceedingly fond of "dust"-baths The English species shows a preference for some sandy knoll screened from observation by bracken; here they "busk" to their heart's content, having spent the early hours of the day, from dawn till about 10 A.M., in feeding. That the French species displays similar predilections is rather a matter of inference than of definite observation. A curious point, which may fittingly be referred to here, concerns the roosting or "jugging" habits of the English partridge, on which, strangely enough, diametrically opposed assertions have been made. It is generally asserted that this bird at night resorts, in coveys, to the most open spots available, and there forming a circle, with the heads facing *outwards*, they sleep, prepared, as well as sleeping birds can be, to meet prowling carnivores at any point. Yet no less an authority than Mr. J. G. Millais assures us that in this magic circle the birds sleep with the heads facing *inwards*. Now it seems clear that both assertions must be based rather on inference than on actual observation The particular inference seems to have been founded on the assertion that at such roosting-places the mutings, or droppings, are arranged in a circle. It is difficult to find any proof of this, and from what is known of the behaviour of birds roosting on the ground, they would all turn head to windward. Only, it is said, when the ground is covered in deep snow does the partridge seek some large low bough for its nightly rest. In how far the redlegged species agrees with the English or "common" partridge in this matter of roosting habits I can find no records.

Neither the English nor the French partridge are migratory birds in the strict sense of the word, yet in both local migratory movements have been recorded. The former is said, regularly, to cross the Solway Firth from the slopes of the Dumfriesshire hills to the new cultivated area of the Cambrian Plain, every autumn; while Millais tells us that every year a few broods of "hill" partridges reared in the Perthshire mountains about Dalhousie return to the lower straths at the beginning of winter.

These movements, be it noted, relate to birds in their northernmost range, and take place apparently to escape the rigours of winter. The French partridge, on the other hand, seems to show at least incipient, or perhaps vestigial, migratory movements during the spring. We suggest vestigial because they may be remnants of normal migratory movements performed by the ancestors of these birds before their importation into England. What evidence there is of migration has been recorded chiefly by the late Henry Stevenson and John Cordeaux, who reported, during the course of many years' observation, many instances of French partridges having been taken, at various points on the east coast, in an exhausted condition, while in some cases they have been seen at sea, flying landwards, at a distance of five miles from the shore. But both these observers were men who enjoyed, and who had earned, a high reputation as ornithologists, and both regarded such "migrations" as uncontemplated excursions, or at any rate as journeys made from the land seaward, and back in a detour, a sort of random voyage of discovery speedily repented of. And this view is surely the one which will still find most favour to-day.

If the partridges of our islands escape the perils of migration, they have at any rate, in common with all other birds, at least one trying period to pass through, and that is during the annual ecdysis or "moult." Among many species, indeed, this is a bi-annual event, and so it remains until the juvenile stage is past There are, however, in *Perdix cinerea*, at any rate, remnants of a double annual moult, in kind precisely similar to that presented by the blackcock (*Lyrurus tetrix*): that is to say, there is a partial "eclipse plumage" which is confined to the head and neck. The existence of such an "eclipse" dress was first discovered by Mr. G E. Lodge, an ornithologist of ripe experience and keen judgment, and was later worked out in detail by Mr. W. R. Ogilvie-Grant of the British Museum He pointed out that from July to September the head and neck of the cock is of a light umber colour relieved by very narrow shaft-streaks of buff, each feather, further, having a narrow black border. Birds killed in September, having the head and neck thus marked, had hitherto been regarded as very "forward" young birds; and this likeness to the immature—and therefore ancestral—plumage is significant. As a matter of fact, however, the feathers of this area, in such young birds, are always of a sandy brown colour, and with wider and more conspicuous shaft-stripes. Mr. Grant further discovered that the adult female similarly assumes a partial "eclipse" dress which is worn from May to September—a much longer period than in the case of the male. The "eclipse" feathers here are of a sandy brown, with a buff shaft-streak, and mottled or barred with black; usually there is also a buff subterminal spot.

Having now reviewed what we may call the general life-history of the partridge, we turn to the all-important series of events which is associated with the continuance of the race. But it is somewhat surprising to make the discovery that really, when all is said and done, only glimpses of the pageant have yet been obtained.

Both *Perdix perdix* and *Caccabis rufa* are monogamous species, and, so far as is known, neither presents any very striking features in regard to their courtship. Though the common-partridge pairs early, it "jugs" for a time in company with its fellows, but on the first burst of warm weather towards the end of February the coveys break up and each pair betakes itself to some secluded spot. Whether this is true also of the redlegged species or not no one seems to know. Of actual courting habits, only a very nebulous history can be gleaned as to the common-partridge, and nothing whatever of this important phase in the life-history of the redlegged species. So far as the amatory display of the common-partridge is concerned, all that we can definitely fasten on is the fact that as soon as warm weather sets in the cock, already paired, becomes demonstrative, calling loudly, jerking his tail, and assuming a defiant attitude, challenging all whom it may concern; while the female squats in the demure acquiescence of one who revels in being possessed! Commonly the challenge is accepted by some unattached male, who approaches either in a series of jerky runs, or with a headlong dash. Then a fight begins, wherein each bird flutters up a yard or two and endeavours to strike his antagonist with feet, wings, or beak, aiming, generally, at the top of the head. At last one is vanquished—generally the challenged—

pursued by the victor, who then returns to his mate. Occasionally, no doubt, the "man in possession" is dispossessed But be this as it may, during the progress of the fight the female is said to run round and round the combatants, uttering the while a series of peevish notes, flapping her wings, and raising and depressing her body. What may be called the "tourney" ground is frequented for some days, but sooner or later the paired birds betake themselves to more or less remote recesses.

There is certainly much that is unsatisfactory, much that requires explanation, in the foregoing account, but what *are* the facts of the case, what *is* the interpretation of such phases as have been from time to time recorded? These are questions which for the time, at any rate, must remain unanswered. The solution of the problem is rather hampered than otherwise by the statement that females often fight for mates, at least this would appear to be so judging from a letter to the *Field* (July 1909) by Mr. J. B. Waldy, who relates the following interesting facts "A friend of mine," he writes, ". . . had as regular visitors last year a pair of partridges, the hen being easily recognised, as she had lost one foot. At the usual time they brought off a brood, but were not very lucky with their young ones, which were gradually reduced in number until only one was left. This, with the old pair, regularly visited the garden, where they were fed throughout the winter until the pairing time came, when the young one, which proved to be a hen, fought a series of battles with her mother, eventually drove her away, and mated with the old cock. . . It all came right in the end, however, for after a week or two, when she had been given up as lost, the old hen came back with a new mate, with whose help she vanquished and drove away the other pair from the garden and field, where she has remained undisturbed ever since." It is certainly open to question whether this female would have so easily been vanquished but for her maimed condition, and it is also somewhat remarkable that her mate did not rally to her aid, more especially since she and her new mate acted in concert in driving away this highly reprehensible pair. On the whole, though it has been stated that rival females fight for mates as fiercely as the males, the evidence therefor seems to need further confirmation.

The choice of a nesting-place seems to be left to the female—heather, coarse grass, bracken, gorse, or bramble thickets being favourite sites, and where these cannot be found, then wide hedgerows, clover, and hay-fields have to suffice. Occasionally two or even three hens will lay in the same nest, but no observations seem to have been kept in such cases as to whether the three mothers share the duties of incubation Occasionally nests containing both partridge and pheasant eggs are found, the brooding bird being sometimes the pheasant, but more often the partridge; and it is believed in such cases that the smaller bird has established sole possession by right of force, for the pheasant is proverbially an indifferent mother, and would doubtless soon give way if repeatedly attacked even by a rival so much her inferior in size. But be this as it may, the arduous work of incubation is apparently undertaken by the female alone, who is said, when sitting, to avoid the dangers which beset her from prowling foxes and other carnivores, by withholding her scent. But this is surely pure guesswork; at any rate no evidence worthy of the name has ever been adduced in support of this theory.

Comparisons are odious, and one hesitates to set the behaviour of one species against another when in the face of danger. Thus, while it may be true that in the defence of their downy young the ptarmigan display more reckless courage than the partridge, it is to be placed to the credit of the last-named species that it has afforded proofs of regard for its unhatched young which cannot be matched in the case of any other game-bird This much appears from evidence collected by Jesse, and quoted by Yarrell.[1]

The story runs as follows:—"A gentleman living near Spilsby, in Lincolnshire, was one day riding over his farm and superintending his ploughmen, who were ploughing a piece of fallow land. He saw

---

[1] *British Birds*, vol. iii p 107.

Plate 142

Partridges

By A. W. Seaby

a partridge glide off her nest so near the foot of one of his plough horses that he thought the eggs must be crushed. This, however, was not the case; but he found that the old bird was on the point of hatching, as several of the eggs were beginning to chip. He saw her return to her nest the instant he left the spot. It was evident that the next round of the plough must bury the eggs and nest in the furrow. His surprise was great when, returning with the plough, he came to the spot and saw the nest indeed, but the eggs and bird were gone. An idea struck him that she had removed her eggs, and he found her, before he left the field, sitting under the hedge upon twenty-one eggs, and she brought off nineteen birds. The round of ploughing had occupied about twenty minutes, in which time she, probably assisted by the cock bird, had removed the twenty-one eggs to a distance of about forty yards."

When birds have the temerity, or stupidity, to lay in a nest near a frequented pathway, the chances that the eggs will be discovered and taken, or accidentally trodden on by some passer-by, are many; yet the Rev. H. A. Macpherson remarks he has known of a case where a portion of a clutch was thus destroyed, and the remainder hatched out by the cock, the nerves of the hen having been so shattered by the accident that she could not be induced to resume her duties. He further remarks that a hen brooding in an exposed situation will commonly cover her eggs with leaves before going off to feed. (Pl. LXI.)

As a rule, at any rate, the male takes no part in incubation, but while hatching is in progress, Mr. Farren tells me, the male assists by taking the young birds as they emerge and brooding them; and further, that when she leaves the nest to feed, he accompanies her and helps to find food When foraging the male runs ahead, then stands for a few moments surveying his immediate surroundings If all seems well he goes on, uttering a low "*zut-zut*," while the hen, crouching low, follows with her brood, seeking seeds and insects as they run. On the slightest suspicion of danger the male utters a clucking alarm-note, and at once flies off, thereby distracting attention from his family; meanwhile the hen and her chicks crouch low and make off among the undergrowth with all possible speed. In a few days, however, the young are able to fly, and thus danger is to a certain extent lessened. But so long as there is need, both parents will display desperate courage in defence of their young When the ruse seems likely to succeed they feign injury, and flutter along the ground as if endeavouring to persuade the pursuer that he has but to make one more supreme effort to seize the stricken bird, but invariably before this happens the lure rises on the wing, and speeds to a place of safety. Meanwhile the chicks have scattered in all directions.

But the partridge realises well enough that there are times when strategy is folly. Thus Yarrell relates an instance where "a person . . . had his attention arrested by some objects on the ground, which, upon approaching, he found to be two partridges, a male and a female, engaged in battle with a carrion crow; so successful and so absorbed were they in the issue of the contest, that they actually held the crow till it was seized and taken from them by the spectator of the scene. Upon search, young birds, very lately hatched, were found concealed amongst the grass." Such formidable foes as the hen-harrier, stoats and weasels, and dogs, are similarly attacked with dauntless courage, and with success. Man alone seems to escape such attacks, and it is only on this account that the ptarmigan enjoys a reputation for superior courage. But the partridge has long lived in the midst of the human race, and has perchance learned the futility of resistance to such a foe.

In how far the redlegged-partridge agrees with its cousin in all that pertains to the period of reproduction we cannot yet say, for long though this bird has been resident among us, little save the colour and number of its eggs has been recorded! This is certainly not to the credit of British ornithologists, who are fond of insisting that we have nothing more to learn of our native avifauna.

THE QUAIL

[W. P. PYCRAFT]

Time was when the occurrence of the quail within our midst was a matter which called for no particular comment. To-day the fact is eagerly recorded, not only in the newspapers but in our ornithological journals, for the quail is going, if it has not gone, the way of the bustard and the bittern, and a dozen or so other species. Our grandfathers can record pleasant days spent in shooting quail, and they have, indirectly, established the fact that in its habits it resembled the partridge (*Perdix perdix*), affecting the same haunts, and preferring the same food, and to this scanty information but little more is to be added And this because, keen though many of our forebears were on the subject, at any rate of our native game-birds, their interest lay in their pursuit, and not in the contemplation of their domestic economy, and we who have followed them have done little better.

Great as are the gaps in our knowledge of this the smallest of our game-birds, the facts that have most impressed themselves upon us are just those wherein it contrasts most strongly with its congeners. In the first place, though displaying but feeble powers of flight, inferior even to those of the redlegged-partridge, it is the only migratory member of our native game-birds. And while more or fewer birds remained with us the year round, the majority left us in October to return with the snipe in May. We may be reminded that the journeyings of the quail are no more wonderful than those of the landrail. And this is true, but we are laying emphasis not so much on its limited powers of flight as on its migrations, for the wanderings of our "common" quail and one or two nearly related species are, it must be remembered, remarkable among the game-birds, which are else, all the world over, a sedentary race.

The migratory habits, and the peculiarities in plumage, further single out the quail as the most primitive, the least specialised, of all our game-birds. More than this, if we extend our survey so as to include all the members of the genus *Coturnix*, then our quail may stand as one of the most primitive of all the *Gallidæ*. The contention that the plumage of the members of the genus *Coturnix* approximates very closely to what must be regarded as the ancestral plumage, at least of the *Gallidæ*, rests on the fact that longitudinal stripes form its most striking feature.

To realise the full significance of this we must turn to the juvenile dress, which undoubtedly answers to the ancestral adult dress. And in proof of this, so far as proof is possible, we need only turn to the juvenile dress of the partridges, which have departed scarcely more from this standard. They have, however, traversed thus far, that the juvenile dress of the common and redlegged-partridge bears a greater likeness—details apart—to that of the adult, than to the juvenile dress of the quail.

Why so charming and so interesting a bird as the quail should be branded as a bird of "skulking" habits it is difficult to understand, for if ever a bird had cause to shun even the suspicion of proximity to man, that bird is the quail. Yet more than one writer has applied this offensive description, when it would be more "sportsmanlike" and more accurate to say that it displayed an unusual alertness and keenness to the presence of danger, and no less skill in avoiding exposure. When pugnacity and desperate courage are called for, the quail is never the bird to seek safety in hiding. This is apparent at once so soon as we turn to the records of its behaviour in the tourney field, whereon, like its larger relatives, it lives for a season during the period of courtship. In all that pertains to this phase of its life the quail again resembles its cousin the partridge. Nay more, as a duellist the quail outdoes the partridge. Travelling like good comrades together over that perilous journey from Africa to our own shores, the males reach us some days in advance of the females —when they come at all—and no sooner have they landed than they proceed to spread themselves over the land, each appropriating to himself as much territory as he can conveniently hold. Then, apparently, each begins to challenge his neighbour as if eager to try conclusions with him, in the hope that presently he may annex both his territory and his prospective mate. The challenge, a curiously insistent and metallic "*click-a-lik, click-a-lik,*" is kept up until sooner or later one or other is sufficiently infuriated to charge upon his neighbour. The fight seems to differ in no way from that described in the case of the partridge, save that it is more sustained, and carried on more fiercely; so much so, that it can end only when both are exhausted, or one is killed.

After such fashion, it would seem, the fates determine whether the victor shall, for that season at any rate, be a polygamist, or shall conform to what is perhaps the more expedient rule of monogamy. At any rate, all authorities seem to agree that the quail in its marital relations may follow either custom. Another determining factor, no doubt, is the relative numbers of either sex which succeed in escaping the diabolical persecution which is meted out to them on migration by "civilised" man.

The duties of incubation fall, apparently, to the female alone, who is a close sitter, so much so that, if carefully approached, she may be stroked or even fed upon the nest. But so soon as the eggs are hatched, the male comes eagerly forward to do his share in guarding and fending for the brood. Two broods or "*bevies*" may be reared in a season.

And now as to the scarcity of quail in our islands to-day. In the latter part of the eighteenth century these birds were fairly abundant; some remained throughout the year, and the numbers were largely reinforced by immigrants in May. In such plenty did they occur that large numbers were snared and netted by fowlers, who lured both males and females by a marvellously faithful imitation of their call. To-day, as we have already remarked, this charming little bird—delicious some would say—is so rare that the taking of specimens is deemed worthy of record in ornithological journals. Mr. Millais puts down this decline "to a considerable extent" to drainage and high cultivation. Yet both he and all other writers agree that the quail thrives best where the partridge thrives best—in cultivated areas. It is certain, then, that we must seek elsewhere, and much farther afield, for the reading of this riddle.

Quail, unfortunately, have from time immemorial found favour with the gourmet, who asks no questions, for conscience' sake. To supply his demands, a positively appalling annual slaughter of quails takes place, and has taken place, for more years than one cares to contemplate, during the spring migration, as they cross the Mediterranean from the south on their way to their breeding quarters, and again on their return journey from Europe towards the end of September. The vast hosts which cross this route are netted by hundreds of thousands, and placed in large low cages, darkened to prevent the prisoners from fighting. Herein they are packed so as hardly to be able to stir, and by the time they have reached the end of their dreadful journey, a large proportion of the captives have died, so that vast as is the number annually consumed, the numbers which are thrown away are almost as great. In one season over a million quail have been taken on the island of Capri alone. According to Mr. Whitaker,[1] Egypt is the country in which most of this netting is now done, and Marseilles the chief port of consignment, some seasons hundreds of thousands being landed there. Obviously this is a matter which calls for international legislation, but international legislation is a very broken reed to trust to.

So far only a bare reference has been made to the "song" of the quail, that is to say, the call of the male, and this because it seems hopeless to express this in human speech. At any rate, though numerous attempts have been made to set this "music" to words, the several results only serve to cancel one another out According to the most common rendering—which, after all, means that which

---

[1] *Birds of Tunisia*, vol. ii. p 251.

Plate 143

Quail

By G. E. Lodge

has most frequently been copied by one author after another—the call of the male resembles the words "*clik-a-lik,*" or "*whet-my-lips.*" Mr. Whitaker, who writes from his own experience, renders it "*whit, wes-whit.*" The German version has it, "*Buck-den-Ruch,*" and the French "*J'ai-du-blé, j'ai pas dé sá*" (sac)! The responsive call of the female is a gentle note like "*few, few,*" or "*pew-pew.*" But however difficult these notes may be to express in terms of common speech, it is readily enough imitated by mechanical means, so that fowlers, who of necessity must be skilled performers, used in days gone by, in this country, to snare large numbers by alternately reproducing the call of male and female. It appears unlikely that this means of earning a livelihood will ever again be possible to the birdcatchers of Great Britain.

EAGLES AND HAWKS[1]

[ORDER: *Accipitres.* SUBORDER: *Falcones*]

GENERAL NOTE

[W. P. PYCRAFT]

At one time known as the "Diurnal Birds of Prey," to distinguish them from the Owls, with which, as we have already shown (vol. ii. p 395), they have nothing whatever to do, the Accipitres present a number of extremely interesting variations on a common structural plan, many of which are very obviously correlated with differences of habit. Some are not so easily accounted for. The short, hooked beak, hooked and pointed talons, ample wings and tail, and the vertical carriage of the body are features common to all the members of the group. These are obviously "adaptive" characters, for they are shared also by the Owls. The characters by which the true relationships of the Accipitres and the Owls are severally established may be more conveniently discussed at a later period: for the moment we are concerned rather with the broad features which distinguish the Accipitres as a group.

While the firmer, more closely fitting contour feathers seem the natural accompaniment of their more strenuous life as compared with the Owls, it is not easy to divine the meaning and purpose of the dense underclothing of down, or the tuft of feathers to the oil-gland, which are common characters of all Accipitres. One of the most striking features of the Accipitres is the saddle-shaped band of somewhat tumid skin, commonly yellow in colour, and wax-like in appearance at the base of the beak, and which is pierced by the nostrils. Since a similar, but less conspicuous, band is met with also in the Owls, we might assume that it is in some way necessary to birds of carnivorous habits, but it occurs also in the Parrots! Another structural feature peculiar to the Accipitres, and more certainly associated with raptorial habits is the long outstanding wing of the lachrymal bone, to the free end of which is commonly added a separate, scale-like plate. This wing forms that projecting shelf, or eaves, over the eye which adds so much to the martial appearance of those birds. It is clear that the function of this is to afford a shade against the glare of light, a very necessary protection where accurate vision is a matter of life or death. In the Vultures, it is significant to note, this wing is far less developed. As with Owls, so with the Accipitres, the iris is either bright yellow, golden brown, or dark brown. This is a curious fact, and one which cannot so far be associated in any way with habit. The Falcons, Buzzards, and Eagles, except the golden-eagle, wherein it is of a golden brown, have a dark brown iris. In the rest of the group it is yellow; nevertheless closer observation might show some correlation between the two.

---

[1] The term Hawk is here used to signify all the Accipitres which are neither Vultures nor Eagles Cf Newton, *Dictionary of Birds*, p 411.

In their habits, as might be supposed from the number of competing species, there is great diversity, though unfortunately our opportunities of studying these have been immensely curtailed by the raids of the game-preserver on the one hand, and the egg-collector on the other. Some, like the kite, have become exterminated; others, once common, have become exceedingly rare. But all agree in the characters presented by the young at birth, for these are all nidicolous, and clothed in long, woolly down. This early plumage, unlike that of the Owls, is made up both of pre-pennæ and pre-plumulæ. Probably, as in the case of the Owls, it will be found that all develop two generations of this downy plumage, a protoptyle and a mesoptyle generation. In all, save the Ospreys, the down is white or grey in colour, but in the osprey it displays a striped pattern; evidently a survival of an ancestral coloration, but why it should have survived alone in the osprey is at present, and probably always will be, inexplicable.

Why, in some, as in some Owls, the female should be so much larger than the male, seems as incapable of explanation as the sexual differences of coloration which many display. Perchance a closer study of the habits of the few species yet left to us may afford a clue to these riddles.

In discussing the Accipitres, it has become a common practice to begin with the Harriers: and this because, on account of the curious, though imperfect, facial disc, they were supposed to form the connecting link between the Owls or nocturnal birds, and the Accipitres, or diurnal birds of prey. We now know that there was no foundation in fact for this association. Others, it may be remarked, regarded the osprey as affording the connecting link because of its reversible hind toe, and the absence of an aftershaft. Later observations showed that this, also, was an association unjustified by an appeal to anatomy. It is clear then that the resemblances between Owls and Hawks are due to convergence, and not to parallelism—that is to say, they are not derived from a common ancestry. We have reverted, in the treatment of the several types of Accipitres dealt with in these pages, to the order adopted by the older ornithologists in placing the Eagles first. But this, be it noted, is not for systematic reasons, but because, owing to the brilliant memoir of Mr. H. B. Macpherson on the Golden-Eagle,[1] we have now a standard of comparison of the habits of the Accipitres during the most critical period in their life-history. This is incomparably the best of its kind which has yet been written. What follows will serve more than anything else to show up the paucity of our knowledge of all the rest of the Accipitres, and will stimulate, it is to be hoped, some of the readers of this work to strive to fill up these yawning gaps. A study of the sparrow-hawk on the lines laid down by Mr. Macpherson might give us a clue as to the meaning of the disparity in size between the sexes which this species more than any other displays. The kestrel, peregrine, merlin, and Montagu's harrier still remain to us, in favoured spots, for study on the same lines, and it is to be hoped that before they are added to the long list of departed species their domestic economy will have been added to our records.

---

[1] H. B. Macpherson, *The Home Life of a Golden-Eagle.*

GOLDEN-EAGLE AND WHITETAILED-EAGLE

[ORDER: *Accipitres.* SUBORDER: *Falcones.* FAMILY: *Buteonidæ.*
SUBFAMILY: *Aquilinæ*]

PRELIMINARY CLASSIFIED NOTES

[F. C. R. JOURDAIN. W. P. PYCRAFT. A. L. THOMSON]

GOLDEN-EAGLE [*Áquila chrysáetus* (Linnæus). Black eagle. French, *aigle royal*; German, *Steinadler*, *Goldadler*; Italian, *aquila reale*].

1. **Description.**—The golden-eagle may at once be distinguished by the fact that the legs are feathered down to the bases of the toes. The sexes are alike, but the female is slightly larger. There is no seasonal change of coloration. (Pl. 144.) Length of male 32 in. [812·0 mm.], of female 35 in. [889·0 mm.]. The general colour of the upper parts is of a dark chocolate-brown, with a more or less perceptible purple gloss. The feathers of the mantle and wing-coverts have paler edges. The primaries are black, the secondaries have the terminal third black, the rest ash-grey heavily mottled with brown; the tail quills are dark brown, darkest at the tips, and crossed by a broad transverse greyish band. The head is of a lighter brown shading into gold colour on the nape, where the feathers are long and acuminate. The under parts are of a dark chocolate, save the feathers of the legs and under tail-coverts, which are paler. The cere, bare skin round the eye, and toes are chrome-yellow; the iris golden brown. Immature birds differ from the adults chiefly in the fact that the tail is of a dull white with a broad terminal band of dark chocolate-brown; the basal half of the feathers of the under surface is white. The young in down is white. [W. P. P.]

2. **Distribution.**—At the present time the golden-eagle is confined as a British breeding species to Scotland and possibly one locality in Ireland. It

formerly bred in Wales and North Derbyshire, but has ceased to breed there for two hundred years, though it survived till nearly a century later in the Lake district and on the Borders. It has been exterminated in the Lowlands of Scotland, but owing to the protection received on the deer forests has greatly increased in numbers of late years in the Highlands, and is now far from uncommon. A few pairs also nest on the islands on the west coast, but not on the Outer Hebrides or on the Orkneys (where a pair or two formerly bred), or Shetlands. In Ireland it survived till recently in Donegal, Mayo, Connemara, Sligo and Kerry, but, according to Mr. R. Warren, probably only one eyrie is now occupied. It is a sedentary species, but the young wander about after leaving the nest. Outside the British Isles it is thinly distributed in mountainous and thickly wooded districts from the Atlas range in North-west Africa and Tunisia, to well within the Arctic Circle in Scandinavia and Finland, as well as in North Russia. It is absent from Denmark, North Germany, the Low Countries and the plains of France and Hungary, but breeds in nearly all the great European mountain systems. In Asia it ranges south to Asia Minor, the Caucasus and the Himalayas, but apparently is represented by local races in Central Asia, and in North America it ranges from Texas through New Mexico, Arizona and California to the Arctic Ocean. [F C. R. J.]

3. **Migration.**—Resident in the few regions in the British Isles where it still breeds (cf. preceding paragraph), but occasionally wandering even to the very south of England. [A. L. T.]

4. **Nest and Eggs.**—The nesting sites vary considerably, some birds breeding in trees and others on more or less precipitous crags, occasionally on steep hillsides. The nest is utilised year after year, but two or more alternative sites are generally occupied in turn. Some are of enormous size, being added to for many years, and are composed of sticks and branches, heather twigs, etc., lined with grasses (*Scirpus*), heather tufts, moss and almost always clumps of the great woodrush, *Luzula sylvatica.* (Pl. LXII.) The share of the parents in building has not been recorded. The eggs in Scotland are usually two in number, sometimes only one, and occasionally three. One instance in which four eggs were found in a nest is recorded in the *Ibis*, 1861, p. 112. They vary considerably, some being white, without markings, while others are blotched, spotted or marbled with varying shades of reddish brown and underlying violet shellmarks. Sometimes one handsomely marked and one white egg may be found in a clutch; while some varieties have the shell suffused with yellowish buff, or purplish grey. Average

size of 100 Scotch eggs, 3·02 × 2·33 in. [76·7 × 59·4 mm.]. Incubation is performed by the hen alone Probably the most accurate statement of the length of the incubation period is that of Mr. E. S. Cameron, who watched two nests in Montana and records the time as 35 and 33 days respectively. (*Country Life*, May 22, 1910.) In Scotland the eggs are laid in the last days of March or early in April, occasionally as early as mid-March, and in the South of Europe in the latter part of March, but considerably later in the North of Europe. Only one brood is reared in the season, and unlike nearly all other British birds, the Golden Eagle appears not to lay again if the eggs are taken, at any rate in Scotland, though in California several instances of second layings have been recorded. [F. C. R. J.]

5. **Food.**—Grouse, ptarmigan, hares, rabbits, and occasional small mammals, and small birds and sickly lambs. The young are fed on the livers of rabbits and hares, and the flesh of birds, by the female. [W. P. P.]

WHITETAILED-EAGLE [*Haliáetus albicílla* (Linnæus). Sea-eagle, erne. French, *aigle à queue blanche*; German, *Seeadler*; Italian, *aquila di mare*].

1. **Description.**—The whitetailed-eagle can always be distinguished from the golden-eagle—with which it is often confused—by the fact that the tarsometatarsus is scale-covered, and not feathered, while in the adult the tail is more or less completely white. The sexes are alike, but the female is slightly larger. Male length 33·5 in. [838·0 mm.], female length 38 in. [965 0 mm.]. The upper parts are brown, save the head and neck, which incline towards ashy grey, and in very old birds towards white. The tail is pure white. The under parts are of a chocolate-brown. The beak, cere, and feet are yellow; and the iris is straw-yellow. Immature birds are darker than the adults, obscure dark brown blotches on the tips of the feathers of the mantle and median wing-coverts imparting a mottled appearance. The tail feathers are of a whitish brown mottled with darker brown. The under parts are of a dark brown and more or less conspicuously mottled as on the back. The beak is black, the cere and legs yellow, and the iris is dark brown. Young in down reddish brown. [W. P. P.].

2. **Distribution.**—As a British breeding species the sea-eagle is now extinct in Ireland, where till recently a pair bred in the N. Mayo cliffs, but one or two pairs maintain a precarious existence in the Outer Hebrides and Shetlands. Outside the British Isles it is a common resident in Greenland, and a few pairs

nest in Iceland, while it is thinly distributed along the N. Russian and Scandinavian coasts and the Baltic, as well as the great lakes of N. Russia and Finland. Till recently a pair bred in Jylland, and it exists in small numbers in Germany and Austro-Hungary and is plentiful in the lower Danube valley and S. Russia, while scattered pairs nest in the Mediterranean region (Maroccan coast, Sardinia, Balearic Isles, Greece, Cyclades and formerly Egypt). In Asia its breeding range extends from Asia Minor across the northern and temperate parts of the Continent to the Pacific (Manchuria and Ussuria), and it is also resident in Japan. Although a sedentary species, except in the high north, immature birds migrate southward in autumn, and have been recorded in Africa, from Gambia on the west and Egypt on the east side, as well as in South China. [F. C. R. J.]

3. **Migration.**—Our own few birds may be more or less resident, but immature examples occur as birds-of-passage in autumn and winter, chiefly on the east of England; adults are rare. [A. L. T.]

4. **Nest and Eggs.**—The nesting sites of this species vary considerably. In the north it is mainly a cliff breeder, building on ledges of precipitous rocks overhanging the sea or some large lake, less commonly on some large boulder in low-lying districts, and occasionally on a hillock in the middle of a marsh. In Central and Southern Europe as well as in some parts of Asia the nests are generally built in trees, sometimes not more than 15 or 20 ft. from the ground and at other times 70 or 80 ft. high. A nest which I saw in 1911 was on a low, sandy island, in a lagoon on the Black Sea, only a foot or so above the water level. This was a very slight affair, but other nests seen have been huge structures of branches, moss, seaweed, turf, and almost any available material, heather, feathers, grass clumps, moss, etc., being used as lining material. The share of the sexes in nest-building seems not to have been recorded. The eggs are generally two in number, though several well-authenticated instances of clutches of three are on record. One from Skye is mentioned in the *Vertebrate Fauna of the N.-W. Highlands and Skye*, p. 160. They are white, somewhat dull, rough in surface, and without gloss. Nest stains are of course frequent, but in a few cases more or less distinct reddish brown spots have been met with. Incubation, according to Saxby, is chiefly performed by the female, though the male also takes part, but in confinement the male and female regularly took turns on the eggs. The period has not been definitely recorded. In Southern Europe the breeding season begins very early, and eggs may be found in February, but in Scotland the more usual time is about the second week of April. Only one brood is reared during the season. [F. C. R. J.]

5. **Food.**—Fish, ducks, and water-fowl of all kinds, young of deer and pigs when obtainable, hares, rabbits, rats, mice, carrion. The young are fed by the female on waterfowl, hares, and rabbits, and in some localities on fish [W. P. P.]

The following species are described in the supplementary chapter on "Rare Birds".—

Great spotted-eagle, *Áquila maculáta* (Gmelin), where descriptions are also given of two species of the family *Vulturidæ*:—

Griffon-vulture, *Gýps fúlvus* (Hablizl) [*Gyps fulvus* (Gmelin)].

Egyptian-vulture, *Néophron percnópterus* (Linnæus). [F. C. R. J.]

THE GOLDEN-EAGLE

[W. P. Pycraft]

While we fully realise that in the neighbourhood of sheep-pastures eagles, in any number, are not desirable, we cannot but feel that in part owing to the selfishness of the game-preserver, and in part to the insatiate greed of the egg-collector eagles are far more rare than they need be. Throughout the British Islands these two factors of destruction have carried on their aggressive warfare till only the Highlands of Scotland and one locality in Ireland remain as a sanctuary for the golden-eagle; while the whitetailed-eagle has been brought to the verge of extinction as a breeding species, not because of any enmity on the part of pisciculturists, but because their eggs were coveted.

For generations these two species held their own in our midst, and during all this time but little was gleaned as to their daily life, little was known of their habits save that the golden-eagle, at any rate, would not scruple on occasion to take a lamb from the flock; some went further and solemnly asserted that even little children were not safe from their ferocious raids. Even to-day newspapers, of the type that revel in horrors and sensational "items" of news, will print long and circumstantial accounts of such "baby-snatchings"; and neither those who write them nor those who read, as a rule, know or care how stupid, how mischievous, are such wild tales.

We know a little of the birds themselves, their plumages, the fashion of their nests, the colour of their eggs—we know as much and no more of them, in short, than of any other of our native birds; or rather this may be said to be true of our knowledge of these birds as far as the ordinary records go. But we can learn much more than this; for some three years ago Mr. H. B. Macpherson took up the task of discovering for himself how the golden-eagle lives during those days of turgid toil and ceaseless anxiety which follow the incubation of the eggs.

The eyrie which for eleven long weeks he kept under constant observation was situated in a deer-forest in the heart of the Grampian range

His first visit of inspection was paid on May 3, when the nest contained two eggs; his second on May 19, when two eaglets, about six days' old, lay crouching on a warm lining of heather and thick grass; the hind-quarters of a rabbit, freshly torn open and partly devoured, lay just beyond the youngsters' reach. For several hours Mr. Macpherson waited in vain for the return of one or other of the old birds to their nursery. At last both parents appeared, approaching at a great height. The male apparently was driving his mate towards the corrie, circling round her when she took the wrong direction, and evidently filled with anxiety to secure her return. Having settled on the face opposite the eyrie, after a pause the female crossed boldly and settled on the edge of the nest, where she gave the young their evening meal, tearing up the remains of the rabbit to which we have already referred. After this she settled down to brood them. A week later, May 25, Mr. Macpherson returned to the nest to find but one young one. This was the smaller of the two, and proved to be a male; the larger one had presumably died and been removed. The carcass of a grouse freshly plucked and disembowelled, and the hind-quarters of a young rabbit lay on the edge of the nest to form the youngster's next meal. Again an interval of two days, and before the nest is visited the eaglet had evidently just been fed, and lay snugly tucked up, and sound asleep, while sleet and piercing gusts of wind raged all round, from which he was protected by an overhanging ledge of rock. An hour later the female arrived, and she was almost immediately followed by the male, bringing the hind-quarters of a rabbit. Satisfied that all was well, both left; but later the female returned to remove the fouled and dirty sticks from the edge of the nest.

Plate 144

Golden-eagle

By G. E. Lodge

UNIV. OF
CALIFORNIA

By the end of the month the youngster had acquired strength enough to strive to crawl towards his parent returning with food; as yet, however, his will was greater than his strength. A rabbit brought by the mother was torn up in the nest. She was evidently hungry, for she devoured the intestines ravenously, and picking out tit-bits of liver gave them to her squealing youngster. Having done this, she seized the rest of the carcass and disappeared with it into the whirling snow which was now sweeping down the gorge. It now became apparent that the youngster was fed at this stage of his career twice daily, at daybreak, and about five P.M., and indifferently on rabbits, hares, and grouse He was now keen-sighted and alert enough to descry his mother when still afar off returning with food, greeting her with squeaking notes. But it is to be noticed her visits were not restricted to feeding time: she returned at intervals during the day to see that all was well.

At this stage, at any rate, all grouse brought to the nest are plucked and headless, and these preparations are made at a given spot which is used as a larder, distant from the nest; and similarly, all hares and rabbits are first deprived of their fur. Not until the downy stage is passed it seems is unplucked prey brought to the young; and we may take it that till the youngster is some weeks old the stomach is incapable of forming pellets containing such indigestible remains. Another point is also brought out at this stage—to wit, that during the first two months the nest is kept scrupulously clean, all refuse being cleared away as it accumulates, and deposited in "middens" at some distance off, not scattered broadcast.

More food having become necessary now, the cock bore his share in collecting it. One afternoon Mr. Macpherson had the good luck to see him arrive at the nest bearing a grouse. Standing with both feet upon his victim, he suddenly, with a terrific sweep of his powerful foot, ripped the bird open from breast to tail, and then took his departure, leaving his mate to break up the carcass on her return.

At about six P.M. the feast took place. Beyond the reach of the youngster she gorged herself upon the entrails, every now and then coming forward to give the eaglet some dainty morsel of liver or flesh, which he greedily plucked from her beak. Having satisfied her own hunger, she then gorged the eaglet to repletion; and this done, bore away the remains of the carcass, returning speedily to settle down by him for the night. Neither rabbits nor hares had ever been used as food if grouse were available, and in no case during the downy stage was anything but the liver of these rodents given him; their flesh he was not allowed to eat till big enough to tear it in pieces for himself. Further, young rabbits and leverets were brought to the nest whole; of the adults the hind-quarters only were brought.

By June 4th the youngster began his first lessons in feeding himself. His mother first opened the bird with her great beak, then removed and ate the entrails, which the youngster was never allowed to touch This done, she held the carcass towards him so that he might pick out the liver and kidneys. A week later—June 11th—marked his early attempts to walk. For a second or two he would stand upright, but the weight of his body generally overbalanced him when he tried to make a step; but in the course of an hour or so he achieved some measure of success, and the day following was marked by a surprisingly rapid improvement A month had now passed since he left the shell, and the first wing feathers were making their appearance. A fortnight later the body was half-clothed in feathers, and the youngster had meanwhile acquired the art of feeding himself, making, while under observation, a hearty meal of a hare's hind-legs. As yet, however, he had not learned the art of standing on his prey and tearing it in pieces with his beak.

A new and surprising addition to his achievements was now remarked—he had begun to play. Behaving like a child left to amuse itself, he seized hold of pieces of heather, tossed them up in the air, and assumed odd attitudes. A day or two later his mother suddenly dropped down on to the nest from the skies with a young hare—unplucked, be it noted; while a minute later the father appeared with a ptarmigan. The female now seemed to realise that she had neglected an important duty, and at once proceeded to pluck the hare, a task which was accomplished in an incredibly short space of time. The youngster was thrown into a great state of excitement by such a display of good things, and both parents in the nursery at the same time, and ran from one to the other as if expecting food from both. Receiving nothing from either, he made a vain attempt to open the leveret for himself, and on this the mother rips open the ptarmigan, eats the entrails, and feeds her nursling on the flesh. From this time onward the eaglet passed the night alone, his mother coming at dawn to remove the refuse from the nest. And from now onwards hares and rabbits are brought to him only partially plucked, and fur is regularly swallowed. This ingestion of fur and feathers, it is to be remembered, is essential to the well-being of raptorial birds, though for the first six weeks it would seem both fur and feathers are scrupulously removed from all carcasses brought to him.

On one occasion a rabbit's leg was his only allowance for breakfast, and this he evidently regarded as very meagre fare, for having demolished it, he began to flap his wings, and cried incessantly, like a hungry child. Not till noon did his mother again visit him, when she brought a huge brown rat, which was speedily disposed of. Next morning, after a breakfast of the hind-quarters of a rabbit, the eaglet, evidently satisfied, performs again his comical antics with bits of heather and grass. At noon the cock brought him a young grouse, which, when left to himself, he devoured completely, bones and all. With the legs he evidently had some difficulty, since he first looked at them critically, then lifted them up in his foot and examined them, and finally swallowed them. These were probably the first bones he had ever swallowed.

The youngster, now just over seven weeks old, has now learned to walk with ease, and has well-grown wings. As his parents approach with food he now runs to meet them, and be it noted, in taking possession thereof, spreads his wings to cover his prey, as is the custom with raptorial birds; but he does this in spite of the fact that he is the only occupant of the nest. When left to himself he now makes short voyages of discovery, wandering along the ledges of the rock near the nest, but returning thereto at night. Should the parents return to the nest and find it empty they speedily discover the whereabouts of the truant, and leave his meal with him.

By July 9th the youngster is two months old, and several times daily practises flight with great gusto, standing with legs well apart and flapping vigorously. Four days later he has gained strength and skill enough to mount, albeit insecurely, on the top of a stone. At nine weeks old his meals have increased in number to three per diem, and now the parents no longer remove the broken meats of his feasts from the nest, but all refuse is allowed to accumulate. This fact was noted on July 13th. Ten days later the whole eyrie had become "filthy beyond description, and swarming with vermin." His parents evidently realise that in a day or two longer the youngster will be able to leave the nest. And the mother, as if to test the truth of her calculations, on bringing him his morning meal, tempts him to make a trial flight. Settling on the far side of the nest she flapped her wings vigorously, as if giving him a lesson. The eaglet, ravenous with hunger, for one brief moment flew clumsily towards her, then lit on his feet by her side, following on foot as she backed away. A week later his career as a nestling ended.

At the time of this momentous flight the eaglet was eleven weeks old, and he had still much to learn, was still dependent on his parents for food, taking lessons daily in the art of capturing and killing prey, and receiving instructions, doubtless, in the no less important art of avoiding enemies—Man in particular.

Not the least interesting part of these observations is the evidence we have brought to light of the comparatively small share borne by the male in the arduous duties of catering for the young. He brought food daily, but the female nearly always fed the youngster, and only once was the male seen to remove offending matter from the nest.

For five long months the youngster demands every hour of his parents' day. But sooner or later, as with all the Accipitres, there comes a change. the youngsters, guarded with such loving care, are suddenly driven forth to seek their fortunes in the great world outside. But this seeming callousness is, as a matter of fact, a necessary sternness: for if the young remained on the scene of their birth there would speedily arise a struggle for the means of subsistence, for an area quite sufficient to support a pair of eagles will be quite inadequate to maintain twice that number. But circumstances alter cases, as is shown by the fact that in the Algerian Sahara, Mr. Whitaker reminds us, Canon Tristram found it nesting in colonies! But this amicability seems to have been an enforced one, due to the limited area of possible building sites.

Though Mr. Macpherson was not the first to attempt the study of the domestic economy of the golden-eagle, his essay is by far the most complete. But five years earlier than this Mr. E. S. Cameron,[1] a resident in Montana, set himself a similar task. The eyrie in this case was placed on a shelf of granite rocks on the north side of the Yellowstone, on the Northern Pacific Railroad, and, therefore, under totally different climatic conditions. The young watched by Mr. Macpherson were reared amid sleet and snow and rain, while those on the American Continent had to face burning sun. In both cases the young were shielded from extremes of weather by the parent bird, which stood over their young with outspread wings to shield them in the one case from torrents of rain, in the other from heat so great as to cause even the adults severe suffering, as they stood open-mouthed, panting, and with dripping beaks, while the young lay almost prostrate. The male took no part in incubation, but bore his full share in catering for the young, and shielding them from the sun

---

[1] E S. Cameron, "Nesting of the Golden-Eagle in Montana," *Auk*, xxii, 1905, p 158

He did not, however, feed them. This, as in the case of the Scottish birds, was done by the female. As in the case of the birds watched by Mr. Macpherson hares and birds were plucked, but while mammals and snakes were always decapitated before they were brought to the nest, birds were only occasionally so treated. But Mr. Cameron apparently saw no playing on the part of the eaglets, nor did he witness their first attempts at feeding themselves, at walking, or flight.

Mr. Macpherson and Mr. Cameron have placed all bird-lovers under a great obligation by their vivid and exhaustive studies of this most interesting bird. They have done much to correct our notions of the habits of the golden-eagle. They have shown, for example, that Seebohm was far from the truth when he gravely assured us that it is more a vulture than eagle, feeding greedily on carrion, and that it will not scruple to convey dead rabbits to its young. This is certainly not borne out by Mr. Macpherson, nor even by Seebohm himself, for he begins his article on this bird with a comment on the havoc wrought by it on sheep-farms. In like manner he describes it as "the proud king of birds," and on the next page that his motions are "sluggish, cowardly, and tame. . . ." That the golden-eagle, when pressed by hunger, will eat carrion there is little doubt, but shipwrecked sailors have been known to eat then their fellows. This does not, however, justify the assertion that the people of their race are cannibals.

On occasion, it would seem, the golden-eagle will hunt in concert for game, one gliding over the ground and beating the bushes and shrubs with its wings, while the other keeps on the look-out, at a slight elevation, for chance rabbits or hares which may be driven out. Large animals are seized by the head with one foot and the haunch with the other; smaller victims are seized by the head only. Birds are seized when crouching and not on the wing, the eagle lacking the speed in turning and checking flight necessary for the capture of birds on the wing.

Of the habits of courtship of the golden-eagle we know nothing, nor is it certainly known whether, like the sparrow-hawk, it will breed in the immature plumage. There is much, too, concerning their everyday life on which we should like enlightenment. That they are fond of bathing, and no less fond of basking in the sun, is well known: but on all else in the daily round of life we know nothing.

THE WHITETAILED-EAGLE

[W. P. Pycraft]

And now as to the sea-eagle (*Haliaetus abicilla*) to which reference has already been made. Unhappily the comparisons to be drawn between this and the golden-eagle are few in number, for this fine bird is now almost extinct as a British breeding species, owing, in part, to the senseless persecution of those who are unable to tolerate the presence of raptorial birds in their vicinity, and in part to the raids of egg-collectors

But at the outset it should be remarked that the sea-eagle, or whitetailed-eagle, not only represents a distinct genus, but a distinct group of the Eagles, only very remotely related to the true Eagles. According to Dr. Suschkin,[1] indeed, the whitetailed-eagle should be included in the Milvinæ.

As its name implies, it is, for choice, a dweller by the sea; but large inland areas of water afford it a no less congenial harbourage. It is altogether a more versatile species than the golden-eagle. As might be supposed from the sharp-pointed, horny excrescences on the sole of the foot, fish form no small part of its diet. And these, Naumann tells us, are often seized by a plunge, as in the case of the osprey. Occasionally a fish too large to be raised aloft will be seized, and the claws, having been driven deeply into the victim's body, cannot be removed, with the result that the wretched bird is drowned. Naumann cites a case when one of these eagles seized upon a sleeping seal, which at once plunged into the water, where both perished. This bird is also occasionally taken in nets set just below the surface of the water for seals. At times, it seems, this handsome bird will alight on the sea to rest. At any rate Naumann cites an instance when one was seen to alight thereon, and, spreading its pinions, to remain afloat some minutes.

---

[1] P. Suschkin, "Beitrage zur Classification des Tagraubvogel mit zugrundelegung des osteologischen Merkmale," *Zool Anzeig*, xxii., 1899

But besides fish, this bird feeds, and largely, on water-fowl of various kinds—gulls, ducks, water-hens, and so on,—and in times of scarcity on the young deer, and sheep, as well as on hares, rabbits, moles and mice. As with the golden-eagle, large animals are often hunted by two or three birds acting in concert.

Carrion seems to be more frequently eaten than in the case of the golden-eagle, and Mr Reginald Lodge,[1] on more than one occasion, when hunting in Albania, found the sea-eagle and the vulture busy at the same carcass.

Of its courting habits a glimpse is afforded us by Seebohm, who speaks of the insuperable difficulty of conveying any idea in words of the remarkable skill displayed on the wing by two rival males when buffeting one another in mid-air, during the period when the struggle for a mate is going on. For though these birds, like the golden-eagle, and, indeed, most birds of prey, seem to pair for life, this conjugal union is always liable to be broken by a more masterful, more powerful, mateless male. During such aerial battles each male strives his best to gain the sky of its opponent, and their acrobatic efforts are accompanied by screaming and yelping cries which harmonise with the wild solitudes which form the scenes of such warfare.

All that we seem certainly to know of the domestic economy of these birds, from the mating period onwards, is that the male bears his share of incubation, and of the care of the young. But how large a share is a matter for conjecture. And we know no more as to the food, and method of feeding of the young, than that it will take to the nest whatever animal food is at the greatest plenty in the neighbourhood—bird, beast, or fish. As to the part played by the male, the cleaning of the nest, the education of the young, our records are *nil.*

---

[1] R. B. Lodge, *Bird Hunting through Wild Europe.*

THE HARRIERS

[ORDER: *Accipitres.* SUBORDER: *Falcones.* FAMILY. *Buteonidæ.*
SUBFAMILY: *Circinæ*]

PRELIMINARY CLASSIFIED NOTES

[F. C. R. JOURDAIN. W. P. PYCRAFT. A. L. THOMSON.]

MARSH-HARRIER [*Círcus æruginósus* (Linnæus). Moor-buzzard, bald-buzzard. French, *busard des marais*; German, *Rohrweihe*; Italian, *falco di padule, falco castagnolo*].

1. **Description.**—The marsh-harrier may be distinguished from its congeners, at all ages, by its relatively larger beak, and in that the fourth primary is the longest, the third nearly equals the fifth, while the first and seventh are equal. The male is of an umber-brown above, save the head and nape, which are white, tinged with rufous and striated with dark brown, and the secondaries and tail, which are ash-grey. The under surface is of a creamy buff striated with dark brown, but the abdomen and shank feathers are rufous. Cere and legs yellow. Iris orange. Length 21 in. [533·0 mm.]. The female resembles the male, but has the tail brown, tinged with grey. Cere greenish yellow. Legs yellow. Iris reddish yellow. Length 24 in. [609·0 mm.]. Immature birds present great variation in coloration; but they may be described as of a uniform chocolate-brown. Later the cream-coloured head is assumed. The tail is never barred, either in immature or adult birds. The downy young is white. [W. P. P.]

2. **Distribution.**—As a breeding species in the British Isles, this bird is on the verge of extinction. Attempts to breed are made occasionally in the Broad district in Norfolk, but are almost invariably unsuccessful, one or both of the birds being generally shot. Until recently a few pairs were resident in Queen's County and the adjoining parts of King's County and West Meath, but the latest information is that it is much reduced in numbers. Possibly a pair may survive in the bogs of Galway. On the Continent its breeding range extends southward

Photo by H. Moore

Golden eagle's nest and eggs on cliff ledge

Photo by H. Bentham

Montagu's harrier's nest and eggs on ground

UNIV. OF CALIFORNIA

Ph[illegible] H. [illegible]

Young marsh harriers in nest on ground

from Southern Sweden and Russia south of the Gulf of Finland and Archangel, while in the Urals it reaches lat. 58°. Over the rest of the Continent it is found in marshy localities, being especially common in Friesland, South Spain and South Russia. It breeds also in North Africa, from the Canaries and Marocco to Egypt, and in Asia is found east to the Ob valley and Kashmir, and south to the Euphrates valley. In Northern Europe it is migratory, ranging in Africa commonly to Abyssinia and in small numbers to German East Africa, Angola, Mashonaland and the Transvaal, while in Asia it reaches India, Ceylon, Burma and the Malay Peninsula. South European and North African birds are sedentary. [F. C. R. J.]

3. **Migration.**—A few may still be resident in midland and western localities of Ireland, wandering to some extent in autumn (cf. Ussher and Warren, *B. of Ireland*, 1900, p. 119). In England, apart from occasional attempts to nest in Norfolk, it is now only a rare spring and autumn migrant from the Continent, penetrating at times to Wales and the western counties (cf. Forrest, *Fauna of N. Wales*, 1907, p. 261; Clark and Rodd, *Zoologist*, 1906, p. 299; J. Clark, *Zoologist*, 1906, p. 284; etc.). There are very few Scottish records. [A. L. T.]

4. **Nest and Eggs.**—The nest is usually built in a reed-bed, or under cover of aquatic vegetation of some kind, and is composed of dead reeds and sedges, lined with rather finer but similar material. The amount of material used varies considerably, and I have seen additional material carried to the nest during incubation. Sometimes the nest is said to be placed in the lower branches of a tree,[1] or more probably a bush. (Pl. LXII.) Probably both sexes share in the work of nest-building. The eggs vary from three to five as a rule in number, occasionally six, and are white or bluish white in colour. Occasionally eggs with red-brown markings, more or less distinct, have been assigned to this species. Average size of 100 eggs, 1·93 × 1·5 in. [49·1 × 38·3 mm.] No reliable information is available as to the period of incubation; Tiedemann includes it in the 21-24 days' group, but this seems a short period for a large Accipitrine bird. In those cases where I have been able to distinguish the sex of the sitting bird, incubation was performed by the female. The breeding season in N. Germany and Holland begins at the end of April or early in May, but many birds do not lay till late in May. If the first clutches are taken the parents will lay again and again, so that fresh eggs may be found in June, but possibly in some cases a second brood is reared. In Spain the breeding season is earlier, and eggs may be obtained from the end of March onwards. [F. C. R. J.]

---

[1] Cf. Yarrell, 4th ed., I p. 130; Gurney, *Rambles of a Naturalist*, p. 144, note.

5. **Food.**—Fen and water birds, small mammals, snakes, frogs, insects; and the eggs and young of other birds whenever they are to be had; the latter form part of the food of the young (see p. 103). [W. P. P.]

HEN-HARRIER [*Circus cyáneus* (Linnæus). Blue-hawk, ring-tail; furze-kite (Devon); kattabelly (Orkneys). French, *busard St. Martin*; German, *Kornweihe*; Italian, *albanella reale*].

1. **Description.**—The hen-harrier may always be distinguished by the fact that the 2nd, 3rd, 4th and 5th primaries have emarginated outer webs, but the emargination of the 2nd primary is concealed by its covert. Further, the 5th primary is equal in length to the 2nd. The sexes differ conspicuously in size, and there is no seasonal change of coloration. The male has the upper parts of a pale slate-grey, the rump white; the fore-neck bluish grey; the rest of the under parts white. Cere, iris, and legs pale yellow. (Pl 145) Length 19 in. [482·0 mm.]. The female has the upper parts dark brown, with white mottlings in the nape, in the periphery of the disc, a white rump tinged with rufous, and five dark bars across the tail. The under parts are buffish, more or less heavily striated with dark brown, including the elongated shank feathers. Cere and legs yellow, iris brown. Length 21 in. [533·0 mm.]. The juvenile plumage resembles that of the female, but the upper parts are browner; the breast is buffish white with narrow striations of dark brown. The colours of the top parts as in the female. Young in down white. [W. P. P.]

2. **Distribution.**—In the British Isles, although formerly much more widely distributed, the hen-harrier is now chiefly confined to the Orkneys and the Outer Hebrides. A few pairs also probably still breed in the wilder mountain districts of Ireland, and in 1882 Mr. R. J. Ussher found a nest in co. Waterford. It was also found nesting in Carnarvon in 1902, and has probably bred recently in Merioneth. In Cornwall it bred from 1903 to 1905 and may possibly still nest on Exmoor. It has ceased to breed in Dorset, but nested in Hants as recently as 1893, and was formerly common in the fens of East Anglia, though now extinct there. On the mainland of Scotland it is almost, if not quite, extinct as a breeding species. Outside the British Isles it is found in suitable localities throughout Europe south to Northern Spain, Central Italy and South Russia, while northward it ranges up to lat. 69° in Lapland. In Asia its northern limit is 68-69° in W. Siberia and 69° 4′ in East Siberia, and it is not found south of Tibet during the breeding season. In the British Isles it is a resident, but on the Continent in winter it ranges

to the Mediterranean region and North Africa as far as the Sahara, and apparently Nubia and Abyssinia,[1] while in Asia it visits Arabia, Persia, Baluchistan and Northern India. [F. C. R. J.]

3. **Migration.**—A resident, and apparently also a bird-of-passage on its way to and from the Continent. The species' British breeding-area has been indicated in the preceding paragraph, but in autumn and winter the birds are more widely diffused, and it is at these seasons for the most part that they are seen in the eastern and southern districts of England. In autumn young birds are comparatively numerous as migrants, chiefly on the east of Great Britain; on the return passage they are rarely met with. A few, chiefly adults it seems, pass the winter in the British Isles. (Cf. Saunders, *Ill. Man. B. B.*, second edition, 1899, p. 317; Witherby and Ticehurst, *British Birds*, vol. i. p. 317; Ussher and Warren, *B. of Ireland*, 1900, p. 121; Nelson, *B. of Yorks.*, 1907, p 318, etc.). [A. L. T.]

4. **Nest and Eggs.**—The nest is always on the ground, sometimes in rough heather on moorlands and occasionally among rank vegetation in marsh lands, while in the central European plain it frequently builds among the growing corn. The same hillside may be resorted to year after year unless, as is frequently the case, the birds are killed. The amount of material used varies, sometimes only a few heather twigs, bents and grasses being used, while at other times it is rather bulky, and on the Continent potato stalks, moss, hair, feathers and other materials have been found in the nest. Information as to the share of the sexes in building is not available. The eggs are usually from four to six in number, but eight have been found in one nest (cf. *Vert. Fauna of N.-W. Highlands and Skye*, p. 135). They are, as a rule, pale bluish white, without gloss, but occasionally may be met with spotted more or less distinctly with rusty red or red-brown. Average size of 100 eggs 1·78 × 1·40 in. [45·3 × 35·7 mm.]. Incubation is performed by the female alone, and is said to last for three weeks, but more exact information on this point is desirable. In Scotland the first eggs are deposited at the end of April, and full clutches may be found from the first week of May onward, sometimes not till the second or third week of that month. As the birds will lay again after the first clutch has been taken, fresh eggs may be found in June, but only a single brood is reared in the season. [F C. R. J.]

5. **Food.**—Of the adults, water and fen birds, and small mammals, frogs, fish, insects, and eggs of the birds on which they prey during the rest of the year. The young are fed largely on nestling birds (see p. 103). [W. P. P.]

---

[1] Mr A Chapman states that it visits British East Africa in winter (Athi plains)

MONTAGU'S HARRIER [*Círcus pygárgus* (Linnæus). *Círcus cineráceus* (Montagu). Ash-coloured harrier. French, *busard cendré*, German, *Wiesenweihe* ; Italian, *albanella minore*].

1. **Description.**—Montagu's harrier may always be distinguished from the hen-harrier by the fact that the emargination of the outer primaries is confined to the 2nd, 3rd and 4th ; further, the emargination of the 2nd arises well above the major covert, and the 5th primary is conspicuously shorter than the 2nd The sexes differ conspicuously in size. In the male the upper parts are of a slate-grey, with a black bar across the secondaries ; while the tail is crossed by five dark brown bars except the middle pair. Fore-neck and breast ash-grey, abdomen white with rufous striations Examples of a sooty black occasionally taken. Cere, legs and iris yellow. Length 18 in. [457·0 mm.]. In the female the upper parts are dark brown, with a few blotches of rust-red on scapulars and lesser wing-coverts. Facial disc dark brown. Under parts pale yellowish rust-colour striated with rufous in the flanks. Length 19½ in. [495·0 mm.]. The juvenile dress is of a dark brown "laced" with rust-colour in the wing-coverts, while the under parts are of a rust-red, darker than in the female, and faintly striated. Young in down white. Montagu's harrier, like others of the genus, is subject to melanism, and old birds are sometimes found nearly black ; while young birds have also a melanistic phase, and this is often so with British specimens. [W. P. P.]

2. **Distribution.**—To the British Isles this species is a summer visitor in small numbers, and almost annually attempts to breed in the southern counties of England, from Cornwall east to Sussex and Surrey, and occasionally in Norfolk, Suffolk, Cambridge, Yorks, Merioneth (1901) and possibly also in Northumberland and Notts. It is only a rare straggler to Scotland and Ireland, but has once occurred in the Solway district in summer, and has several times been obtained in co. Wicklow in Ireland. On the Continent it is thinly distributed, but does not range so far north as the Hen Harrier, and is absent from Russia north of the mouth of the Mologa and the Gulf of Finland, and is a rare straggler north of the Baltic, except perhaps in South Sweden. Southward its breeding range extends to the Mediterranean and North-west Africa, where it is locally common. Its distribution in Asia is very imperfectly known, but it is known to breed in Turkestan and South-west Siberia. During the winter months its migrations extend to the Canaries

and over the African continent south to Damaraland and Cape Colony, while in Asia it ranges to India, Ceylon and Burma. [F. C. R. J.]

3. **Migration.**—A summer visitor to the south of England, rarely occurring farther north than Yorkshire, although there are a few records from the south of Scotland. There are also a number of Irish occurrences on record, chiefly for co. Wicklow, or adjacent districts, in the autumn months. A gregarious migrant which, on the Continent, often forms large flocks. (Cf. Saunders, *Ill. Man. B. B.*, second edition, 1899, p. 319; and Witherby and Ticehurst, *British Birds*, vol. i. p. 318) [A. L. T.]

4. **Nest and Eggs.**—The sites are very variable, and in England the nest is usually found on moorland, among heather or gorse, and occasionally in growing corn. In Southern Europe it may be found in bramble thickets, sometimes a foot or two from the ground, and at other times in floating vegetation in reed-beds and marshes. The amount of material used also varies greatly: sometimes only a few twigs and grasses arranged in a circle; at other times large masses of reeds, sedge, and dead vegetation or grasses and twigs. (Pl. LXII.) In South Spain and North Africa the nests may be found in colonies, but, as a rule, single pairs only are to be found. The share of the sexes in building seems not to have been recorded. The eggs vary as a rule in number from four to six, and are slightly smaller than those of the hen-harrier; but as their measurements overlap, they cannot always be distinguished. In colour they are a pale bluish, without gloss, and sometimes show more or less distinct red-brown markings. Average size of 100 eggs, 1·63 × 1·28 in. [41·4 × 32·6 mm.]. Little seems to have been recorded as to the share of the sexes in incubation, but the hen evidently takes the greater share, if not the whole duty. The period is also not known. In England the breeding season is later than that of the hen-harrier, and eggs are rarely met with before the last days of May or the beginning of June, but in the south of Spain full clutches may be found by the end of April. Only one brood is reared during the season. [F. C. R. J.]

5. **Food.**—Mice, small birds, eggs, lizards, vipers, frogs, grasshoppers. The young are fed on mice, small birds, and frogs (see p. 103). [W. P. P.]

THE HARRIERS

[W. P. Pycraft]

The term Harrier seems to have been first used for the species known as the "hen-harrier," from the frequency of its raids on poultry. Later the name Harrier became applied to all the species displaying a more or less conspicuous facial disc. Time was when three species of harriers were common in Great Britain, but the reclamation of land, game-preservation, and the collector have all but exterminated these interesting and handsome birds.

Their most striking peculiarity is the incipient facial disc, already alluded to. This recalls that of the Owls, but is far less developed; and if the feathers of the facial portion of the disc be raised, just where they impinge upon the marginal or peripheral feathers which surround this disc, a large, sub-conical bare space will be found, which seems first to have been figured by Macgillivray; but the external aperture of the ear is never greatly enlarged as it is in many owls, nor are the facial feathers so strikingly modified. In that the breast is never transversely barred they resemble the Buzzards and Eagles: the first-named they further resemble in certain phases of their flight, since they are given on occasion to wheeling and sailing aloft. On the ground, however, they have a very distinctive carriage which is determined by the great length of the wings and legs.

As might be supposed, these three species, which may still be numbered upon the list of British birds, differ somewhat both in their haunts and habits. All affect open country, and for choice marshy or fenny districts, wherein are abundance of their favourite prey, snakes, lizards and frogs, can always be relied on. But of this anon.

The hen-harrier, the largest of the three British species, is still reckoned a resident among us, but even on the undisturbed moors of

Plate 145

Hen-harrier (male)

By G. E. Lodge

Scotland and Ireland it has greatly decreased during recent years. A generation or so ago it nested annually, and in some numbers, on the higher ground in many parts of England and Wales.

The great disparity in size and coloration displayed by the two sexes led the older ornithologists to share in the popular belief that they represented distinct species, the female being known as the "ring-tail." Montagu was the first to show that this was an error. He definitely settled the matter by rearing a brood of them, of which two proved to be females. The male was at first like the females in coloration. By October of that year most of the plumage had assumed the characteristic coloration of the male, but the change was not completed until the autumn of the second year.

While actually on the prowl for food, after the fashion of its tribe, it quarters the ground like a pointer, keeping low down, and travelling with steady heron-like flight, though turning sharply, like a kite, with a twist of the tail. Sometimes, too, it will hover like a kestrel, at others skim the ground like a grouse. St. John, in his delightful *Sports of the Highlands* (p. 103), remarks of the method of hunting that "as soon as the corn is cut it hunts the low country in most determined fashion, flying at a few feet from the ground, and scouring turnip-field after turnip-field, rushy field after rushy field The moment a bird is sighted it darts rapidly to a height of twenty feet or more, hovers a moment, then comes down with unerring aim on its victim, striking dead with a single blow either partridge or pheasant, grouse or blackcock, showing a strength not to be expected from his light figure and slender, though sharp talons. He saw a hen-harrier strike at a "heath-hen" and cut off its head as clean as with a knife. One day he was attended by a hen-harrier for some time, and this bird struck down two hen-grouse which he had put up. He pays special tribute to the bird, however, as a rat-killer, remarking that from its habit of hunting very late in the evening around the rick-yard many an incautious rat is caught up as the bird sweeps silently round. But marsh and swamp are its favourite hunting-grounds, where, according to the delightful wiles just quoted, many a mallard and snipe are surprised and taken by the inconceivable rapidity of his swoop. No other writer dwells so much on the killing of large birds by the hen-harrier as St. John; on the contrary, all seem to agree that it preys chiefly on small mammals, small birds, reptiles and frogs, and Yarrell quotes a case of an individual killed near London, from the crop of which no less than twenty lizards were taken. Like the rest of its kin it is a confirmed egg-eater, preying upon all nests within range of its haunts. Macgillivray remarks that he has often seen it come to the stake-nets on the Solway Firth and eat the dead fish there.

We know little of its courting habits. Macgillivray tells us that at the commencement of the breeding season they may be seen chasing one another and uttering a loud, clear cry like that of the Kestrels. This performance is varied by aerial flights at a great height, the birds soaring and sailing in circles; and this exercise is continued by the male while his mate is incubating. Further, he remarks that for several days prior to nest-building both sexes may be seen soaring about as if in search of a suitable site.

The smaller Montagu's harrier so closely resembles the hen-harrier that, despite the disparity in size, it has long been confounded with its larger relative, and the discovery of the differences between the two species was made by Montagu. In their habits they also largely agree, though, according to Seebohm and Naumann, Montagu's harrier prefers the dry moor to the swamp, and the cornfield to the reed-bed as a nesting-place. While hunting after the harrier fashion it seems to prey on smaller quarry than its larger relative, being content with mice, lizards, frogs, and grasshoppers, and small birds only when they can be taken by surprise Eggs seem never to come amiss, and Howard Saunders remarks that he once took from the crop of one of these birds two unbroken eggs of the crested lark, and the crushed remains of others.

Its long pointed wings give it very graceful flight, and it seems more addicted to soaring in wide circles than any of its relatives.

According to Mr. Collingwood Ingram, the female alone incubates. On returning to the nest, if her suspicions are aroused, she will alight twenty or thirty yards off, then run to her nest through the heather. Normally she rises straight from her brooding, absents herself thirty or forty minutes, and returns, dropping straight down on the nest. The male appears at intervals and often brings food, which the female takes from him in mid-air. In some parts of France this species is abundant, though less so than in times gone by, when, before the autumn migration, it assembled to roost in thousands.[1]

The handsome marsh-harrier differs conspicuously from the two species just described, not only in appearance, but in habits, shunning the haunts of man and seeking the solitude of swamps. In Montagu's day, he tells us, it was by far the "most common 'falcon' on the sandy flats of the coast of Caermarthenshire, where it preys on young rabbits." He had the good fortune to see as many as nine feeding at once on the carcass of a sheep.

As we have already remarked, all the harriers evince an extraordinary fondness for eggs, and these, it would seem, are carried whole by the male to his sitting mate, on whom alone the task of incubation falls; for on one occasion Seebohm[2] found a nest of the marsh-harrier at Riddaghausen, near Brunswick, containing four eggs, one of the coot, apparently brought "thither to feed the sitting bird." According to Naumann,[3] eggs form the principal diet so long as they are to be had, and when this supply is over a heavy toll is levied on the nestlings. Wild ducks and geese, however, he remarks, defend their young with spirit and a large measure of success, buffeting the marauder, while the young crouch down close together, and so offer a less easy mark. Messrs Ussher and Warren[4] also comment on the fondness of this bird for young ducks and other waterfowl. Even expert divers are overcome. It will beat along the river, they remark, till it drives out a coot. The latter seeks to escape by diving, but the harrier pursues it each time it comes to the surface, until the wretched bird is drowned or taken. This being so, it is not surprising to learn that it will also take fish from shallow water. There is no doubt but that the practical extinction of the marsh-harrier as a British bird is largely due to the work of drainage. There are still, however, areas, especially in Norfolk, which would afford it harbourage if they could but be protected against the raids of egg-collectors.

---

[1] *Zoologist*, 1908, p. 310.

[2] Seebohm, *British Birds*, vol. i. p. 126.

[3] Naumann, *Naturgeschicht, Vogel Mitteleuropas*, v. 27

[4] Ussher and Warren, *Birds of Ireland*, p 120

Of the courting habits of these birds we know nothing. It would seem that the female always incubates, and during the time is fed by the male. In the case of Montagu's harriers at any rate, and perhaps of all, the male provides the food. Often as he approaches the nest, his mate will fly out to meet him and receive the prey, which she then takes to the nest. Both parents thus share in the task of feeding the young, though of the methods of feeding and the later history of the young we know nothing.

THE SPARROW-HAWK

[ORDER. *Accipitres.* SUBORDER: *Falcones.* FAMILY: *Buteonidæ.*
SUBFAMILY: *Accipitrinæ*]

PRELIMINARY CLASSIFIED NOTES

[F. C. R. JOURDAIN. W. P. PYCRAFT. A. L. THOMSON]

SPARROW-HAWK [*Accipiter nisus* (Linnæus). Blue-hawk, pigeon-hawk, musket. French, *epérvier commun*; German, *Sperber*; Italian, *sparviere*].

1. **Description.**—The sparrow-hawk may readily be distinguished by the relatively short wings and long tail, and the fact that the middle toe is more than twice as long as the beak measured from its tip to the cere. The sexes are dissimilar in coloration, and the female is much larger than the male. The adult male has the upper parts of a dark slate-grey; the tail with a brownish tinge and crossed by four or five dark bars. The cheeks are of a pale chestnut, the under parts white, closely barred on the breast and flanks with narrow, sharply defined transverse bars of dark brown. On the fore-breast and flanks the feathers are tipped with bright rust-red, while on the mid-breast an obscure, narrow band of rust-colour runs along the superior border of the bars just referred to. On the hinder flanks the red area greatly increases in extent on the outer webs of the feathers, forming a conspicuous rust-red area. The tibial feathers are also barred, and the lower abdomen and under tail-coverts are white. In very old birds the dark brown bars on the under parts disappear altogether, leaving nothing but Bartolozzi-red bars, producing a very beautiful effect: it may be, however, that this exceptionally red plumage is due not to age, but to individual variation. A more or less conspicuous patch of white appears on the nape. The cere, feet, and iris are lemon-yellow. (Pl. 146.) Length 13 in. [330·0 mm.]. The female has the upper parts greyish brown, the tail paler than the back, and crossed by four dark brown bars. The cheeks are of a pale rust-colour striated with brown; the throat

white, striated with brown; the breast white, the fore-breast crossed by narrow transverse umber bars, and narrow shaft-streaks of the same hue; in the mid-breast and flanks the bars are somewhat heavier. The shank feathers are also barred. The cere, legs, and iris are yellow. Very old females closely approach the males in coloration. Length 15 in. [393·0 mm.]. Immature birds resemble the female, but have the feathers of the upper parts margined with rufous, and the bars of the under surface with narrow rust-coloured superior margins, recalling the same feathers in the adult male. Young in down white. [W. P. P.]

2. Distribution.—A generally distributed resident in all wooded parts of the British Isles. It is scarce in the north and north-west of Scotland and of rare occurrence in the Orkneys, while it is apparently absent from the Outer Hebrides and Shetlands. Saxby's statement that it breeds in the Shetlands is probably due to confusion of names, the kestrel being known there as the "Sparrow-Hawk." On the Continent its northern breeding limit reaches the Arctic Circle, and southward it is generally distributed in wooded districts to the Mediterranean, but in Spain and Italy few birds stay to breed, and it is chiefly met with on passage. Closely allied forms are also to be found in Madeira and the Canaries, North-west Africa, Corsica and Sardinia, and in Asia, where the northern limit of the species is 69° in W. Siberia and 69° 4′ in E. Siberia, while southward it has been found breeding in the Himalayas. Although our British birds are sedentary, North European birds are regular migrants, and in Africa reach Kordofan on migration, while in Asia the southward migration ranges to about lat. 23° in China. [F. C. R. J.]

3. Migration.—A resident, and a winter immigrant from the Continent. In autumn it is frequently recorded at our eastern light-stations (cf. *B. A. Migration Reports*), and its numbers are perceptibly greater during the winter in various districts of Great Britain (cf. Ticehurst, *B. of Kent*, 1907, p. 279; and Gladstone, *B. of Dumfries.*, 1910, p. 206.) In Ireland there is no evidence of migratory movement (cf. Ussher and Warren, *B. of Ireland*, 1900, p. 132). On Heligoland the passage of the young birds lasts from mid-August to late November, and that of the adults from early October to late November; the birds generally arrive on the island in large flights in the late afternoon, descending from a great height (cf. Gätke, *Vogelwarte Helgoland*, Eng. trans., 1895, p. 182). [A. L. T.]

4. Nest and Eggs.—The sparrow-hawk builds a somewhat neat and substantial nest of its own, but takes for the foundation the remains of some deserted nest of magpie, crow, or wood-pigeon in most cases, if not always. Upon this the nest, generally built of larch twigs laid almost parallel to one another, is

PLATE LXIII

Photo by F. E. Daniel

Sparrow-hawk's nest and eggs

Photo by J. C. Crowley

Buzzard's nest and young [redacted] cliff ledge

Photo by R. B. Lodge

Kite's nest and [redacted]

built, and is lined with small flat fragments of bark from coniferous trees and a little down. (Pl LXIII.) R. F. Tomes records a nest in which the superstructure consisted of dead couch grass. Both sexes share in collecting material (H. S. Davenport). The depression for the eggs is somewhat slight, and the upper surface of the nest flattish. The eggs are usually four or five to six in number, but clutches of seven and even eight have been several times recorded. They are laid on alternate days, and by removing one at a time as laid the number can be increased to fifteen or sixteen. In colour they are bluish white, sometimes very boldly blotched with rich, dark chocolate-brown, sometimes only lightly mottled or smeared with cloudy markings of reddish brown and purplish. There is often considerable variation among the eggs in a single clutch, and it is not uncommon to find one or more very lightly marked eggs even in a heavily marked set. Average size of 100 eggs, 1·52 × 1·26 in. [38·7 × 32 1 mm.]. Incubation is performed almost entirely by the female; the male has, however, been shot from the eggs, so that apparently he takes a small share in the work, unless his presence was due to some accident to the female. Older writers estimated the incubation period at about three weeks, but closer observation has proved this to be erroneous. Mr. S. E. Brock puts it at 30-32 days, and Dr. J. H. Salter at 37-38 days, but in the case of nests watched by Messrs E. W. H. Blagg, J. H. Owen and myself the period was as nearly as possible 35 days, which may be taken as the average. The first eggs are occasionally laid towards the end of April, but more commonly in May, and full clutches may be found from the first to the fourth week in May, but generally about the middle of the month. Only one brood is normally reared, but a second clutch is laid if the first is taken. [F. C. R. J.]

5. **Food.**—Young rabbits, rats, mice, lapwings, thrushes, finches, frogs. The young are fed on small birds and mice (see p. 108). [W. P. P.]

The following subspecies are described in the supplementary chapter on "Rare Birds" —

Goshawk. *Accipiter gentilis gentilis* (Linnæus), [*Astur palumbarius* (Linnæus)].

[American-goshawk, *Accipiter gentilis atricapillus* (Wilson).]

THE SPARROW-HAWK

[W. P. Pycraft]

The sparrow-hawk stands in sharp contrast with all the species so far considered. Long-legged, and short-winged, a goshawk in miniature, fierce, elegant, agile and graceful, its many admirable attributes have nevertheless incurred the cordial dislike, both of the game-preserver and the poultry-keeper. Yet, in spite of merciless persecution, the sparrow-hawk is happily one of our commonest birds of prey, though less numerous than the kestrel, which receives a measure of protection, or rather, perhaps, incurs less animosity.

For choice, this bird haunts the well-wooded and cultivated districts—is rare in the wilder and treeless parts of our islands. As might be supposed, from its partiality for woods, it is a short-winged bird: a characteristic of all wood-dwellers. Feeding largely on small birds, it pursues its prey with amazing skill and swiftness, threading its way amid the loose cover which it haunts with a dexterity which defies description. But the prey, when captured, is brought to the ground and eaten. The smaller birds, unhappily, are not alone eaten, pigeons, both wild and tame, poultry, and, most heinous of all, game, also form part of its bill of fare, though it is certain that the "ravages" inflicted on the latter are grossly exaggerated. That this is so, is shown by the fact that some game-preservers, who also have a love for ornithology, and delight in watching the wild career of this intrepid bird, refuse to allow their keepers to kill this bird at sight, or to compass its end by traps. Only when one is found to have abused this protection by taking young pheasants is its death-warrant issued And no one will quarrel with such acts of retribution, for when once the coops have been discovered, the marauder will return again and again for more. Birds, however, do not form its only fare, for mice, young rabbits and frogs are also eaten.

Though it must be a matter of common knowledge that females are more often seen and killed than males, yet, till recently, Naumann seems to be the only writer who has commented on this fact: and he remarks that the male, being more timid and wary than the female, is seldom seen in winter, when it retires to the deeper shelter of the woods. But while it is most often encountered during the autumn, and in the spring during March and April, it is at no time so often seen as is the female. This peculiarity of conduct may be due to the fact of his smaller size—and the disparity between the sexes is most striking—which compels him to be content with smaller prey, and at the same time relieves him from the necessity of exposing himself; for small birds and mice can always be obtained, remote from human habitations. Quite recently, however, Mr. Edmund Selous[1] has suggested that this disparity in size may be due to the fact that circumstances have shouldered upon the male the duty of providing the food during that critical period covered by the term "breeding-season"; and that as this food is largely to be found amid more or less dense cover, a small body and short wings are the outcome of selection. When hunting, it should be remarked, the sparrow-hawk keeps close to the ground, speeding like an arrow, now rising in a beautiful curve to clear a fence, now gliding rapidly along it, shooting and turning from side to side, and ever and anon tarrying a moment over a clump of roses or brambles, as if arrested by a glimpse of a possible victim. A moment's glance suffices to show that the cover is too thick to afford a capture, but the pause has discovered a yellow-hammer perched high on a twig at a little distance off, quite unconscious of danger, and in an instant it is borne off into the wood, there to be speedily plucked and eaten.

How dogged is their pursuit is testified by the numerous records of sparrow-hawks which have flown through the windows of houses when in chase of prey. St. John[2] relates an instance of this kind. On one occasion, he says, "a sparrow-hawk pursued a pigeon through the drawing-room window, and out at the other end of the house through another window, and never slackened his pursuit, notwithstanding the clattering of the broken glass of the two windows they passed through. But the most extraordinary instance of impudence in this bird that I ever met with was one day finding a sparrow-hawk deliberately standing on a very large pouter pigeon on the drawing-room floor, and plucking it, having entered in pursuit of the unfortunate bird through the open window, and killed him in the room.

---

[1] *British Birds*, vol. i p 135.

[2] St. John, *Wild Sports of the Highlands*, p 105.

Seebohm asserts that the sparrow-hawk is fond of hawking at dusk, while Ussher and Warren,[1] on the other hand, make a point of the bird's inability to see well in the fading light, and we share their views.

Of the courting habits of the sparrow-hawk we know nothing, but both Naumann and Seebohm remark that the male, while his mate is sitting, will ascend to an immense height and soar above the nest. From Naumann's remarks it would seem as if these soaring flights were also part of a kind of courting display, since he says that when thus aloft he gives voice to a silvery "*kick, kick, kick,*" remarking that it must be a "pairing" cry, since it is most frequently heard in spring.

Till recently there was a curious diversity of opinion as to whether the sparrow-hawk builds a nest, or adapts that of a crow, or some similar platform, but closer observation, as may have been noticed in Mr. Jourdain's notes, shows that the older authors had imperfectly interpreted the facts.

Both sexes, according to Seebohm, take part in incubation, but the evidence seems to show that this duty is undertaken by the female only, who is fed during this time by her mate. He also provides food for the family, at any rate until they are fledged. Commonly he summons his mate to relieve him of his spoils by loud cries. She then flies out to meet him, and takes the quarry in mid-

[1] *Birds of Ireland*, p. 133

Plate 146

Sparrow-hawks; the bird on the nest being the female

By G. E Lodge

air. But besides, he seems to deposit a certain amount of food in a "larder" in the neighbourhood of the nest, a practice common among hawks, and from thence it is fetched at need by the female, on whom, it seems, the task of feeding the young devolves.[1] Occasionally, it would seem, the young develop cannabalistic appetites, for Ussher and Warren (*Birds of Ireland*, p 133) record an instance where a nest that had contained four young was visited, and only three were found sitting on a leg of the fourth, which had been eaten by its nest-fellows. Such cases of cannibalism are not rare among the Raptores.

The ceaseless activity of the adults is reflected in the young, for even before they are fully fledged they will, on alarm, scramble out of the nest on to the branches of the tree, using the beak parrot-fashion as an aid. Before finally quitting the nursery, it may be remarked, they repair to neighbouring trees, there to be fed by their parents Between meals they occupy the time in flapping from branch to branch, trying and strengthening their pinions, and doubtless on their first flight they receive instruction in the art of taking prey, as is commonly the case among birds of prey

Both on sentimental and scientific grounds one can but regret that these most interesting birds have been, and unfortunately still are, opprobriously branded as "vermin," for they are undoubtedly useful, though at times their depredations need a wholesome check. But those of us who are interested in wild life, and in the problems of evolution, feel that were this bird less persecuted we might perchance discover, from more frequent opportunities of observation, what are the factors which have determined the striking disparity in size between the sexes, and why the exceptionally long and slender toes are provided with such large "*tylari.*" These bulbs beneath the toe-joints, present in all Accipitres, and evidently useful to increase their grip, are in the sparrow-hawk exceedingly long and slender

By falconers the sparrow-hawk, from time immemorial, and still, is held in no small esteem. For though universally difficult to bring into subjection, once subdued, this bird behaves most amiably towards its owners, yet losing nothing of its courage and ferocity. The male, or "musket," is flown at small birds—blackbirds for choice; the female at all kinds of quarry up to partridges. When so large a bird as the latter is tackled, it is interesting to note that the hawk keeps her balance on the back of the stricken and struggling bird by the aid of the wings and tail which are pressed firmly down on to the ground. Whether the bird in a wild state would be able to tackle so large a victim is doubtful, for at any rate in partridge-hawking the falconer always has to come to the rescue. When quail were common in this country they were the favourite quarry, and in India to this day they are commonly flown at by sparrow-hawks by native falconers.

---

[1] See also, in confirmation of this, Edmund Selous, *Zoologist*, 1911, p. 170.

THE BUZZARDS

[ORDER *Accipitres.* SUBORDER . *Falcones* FAMILY · *Buteonidæ.*
SUBFAMILY : *Buteoninæ*]

PRELIMINARY CLASSIFIED NOTES

[F. C. R. JOURDAIN. W. P. PYCRAFT. A. L. THOMSON]

BUZZARD [*Búteo búteo* (Linnæus), *Buteo vulgaris*, Leach. Kit or kite (Devon), puttock (Essex). French, *buse commune* ; German, *Mäusebussard* ; Italian, *pojana*].

1. **Description.**—The buzzard may be distinguished by its brown coloration, and the fact that the tarso-metatarsus, which is relatively short, is scaled and not reticulated. The sexes are alike, and there is no seasonal change of plumage. In coloration the buzzard is very variable, but the upper parts are dark brown, as also are the fore-neck and breast. Often, however, the mid-breast is white, more or less completely barred with dark brown The tail is always barred with dark brown, but the number of the bars is variable More commonly the breast is more or less distinctly marked with broad longitudinal striation on a white ground. Cere, eyelid, legs chrome-yellow, iris dark brown. (Pl. 147.) Length, male 21 in. [533·0 mm.], female 23 in. [584·0 mm.] Immature birds are paler than the adults ; the throat brown, streaked with white, the breast blotched with brown on a white ground. Young in down white.

Very handsome, cream-coloured birds, mottled with brown, are occasionally met with, and melanic specimens are not uncommon. [W. P. P.]

2. **Distribution.**—In the British Isles the buzzard is now confined to the Devonian Peninsula, Wales (where from sixty to a hundred pairs nest), the Lake district, and a few scattered sites on the spurs of the Pennine range ; while in Scotland it is more generally distributed, but is chiefly confined to the mountainous districts and the west coasts, though a few pairs also nest on the cliffs of the Inner

Hebrides. In Ireland it is extinct as a breeding species, though it still occurs on migration. Formerly it was much more widely distributed, and was not uncommon in the wooded districts of England, breeding in Hants as recently as 1896. On the Continent it ranges north to lat. 66° in Sweden, and is found south to the Straits of Gibraltar and the Mediterranean, but in the Atlantic Isles, Sardinia and Corsica, the greater part of European Russia, and from the west shores of the Black Sea to Greece, it is replaced by other local races, and this is also the case in Western Asia. In the British Isles the buzzard is a sedentary species, but birds from the high north move southward in the winter. [F. C. R. J.]

3. **Migration.**—Resident in parts of Great Britain (cf. preceding paragraph), and occurring as an irregular cold-weather visitor over the rest of the country. It is irregularly recorded on both passages on the east coast of England and from the south almost annually in autumn (cf. Nelson, *B. of Yorks.*, 1907, p. 325; and Ticehurst, *B. of Kent*, 1909, p. 269). To Ireland it is now only a casual visitor from October to spring, and very rarely recorded in the extreme west (cf. Ussher and Warren, *B. of Ireland*, 1900, p. 123). There seems to be no definite evidence of much intermigration with the Continent A gregarious migrant; on Heligoland, where it occurs in every month of the year except June and July, it is commonly seen in groups of three or four, these numbers being at times increased "almost up to hundreds" (cf. Gätke, *Vogelwarte Helgoland*, Eng. trans., 1895, p. 183). [A. L. T.]

4. **Nest and Eggs.**—At the present time most of our British buzzards nest on cliffs and rocks, but some still nest in trees, and formerly there is no doubt that tree-nesting birds were in a great majority. The inaccessible nature of their haunts has given the cliff-breeding birds a better chance of surviving The nests are often exceedingly bulky, composed of sticks of varying sizes, heather, etc., lined with grasses and fresh green sprays of foliage from some species of tree, spruce, pine, ivy, etc., which are neatly arranged round the eggs, and renewed from time to time. (Pl. LXIII.) The eggs are generally two or three in number, more rarely four,[1] while very old birds will sometimes incubate a single egg only. They are laid at intervals of about two days, and in colour they range from bluish white without any markings whatever to white marked with rusty stains or spots and blotches of varied depths, varying from red-brown to deep sepia, almost black. Violet underlying shell-markings are also frequently present. Average size of 100 eggs measured by Rey, 2·15 × 1·72 in. [54·8 × 43·9 mm] Both sexes share in

---

[1] One or two clutches of five eggs are on record

incubation (Saunders), and the period is variously estimated at 28 days or 31 days. Though the nest is often repaired about mid-March, the first eggs are rarely found in Wales before the middle of April, and often not until a week or so later. In South Spain, however, full clutches have been found as early as mid-March. Only one brood is reared during the season. [F. C. R. J.]

5. **Food.**—Mice, rats, moles, half-grown rabbits, lizards, snakes, frogs, beetles, carrion, and worms. The young are fed by both parents on mice, moles, reptiles. [W. P. P.]

ROUGHLEGGED-BUZZARD [*Búteo lagópus* (Brunnich); *Búteo lagópus* (Gmelin). French, *buse pattue*; German, *Rauchfussbussard*; Italian, *pojana calzata*].

1. **Description.**—The roughlegged-buzzard may at once be distinguished from the common buzzard by the fact that the legs are feathered to the toes, and the broad white base to the tail. The upper parts are of a dark brown, save the head and neck, which are creamy white with dark brown striations; wing-coverts and scapulars with white bases, and buff margins imparting a streaked appearance. Upper tail-coverts and basal half of the tail white, the rest dark brown tipped with white, and a subterminal bar of black. Under parts white, with narrow bars of dark brown on the throat, and broader bars of the same hue on the breast and flanks; the lower breast and abdomen are brown. The quills have the basal half white, the rest dark brown. The feathers of the legs are fawn-coloured, streaked with brown. Length, male 23 in. [584·0 mm.], female 26 in. [660·0 mm.]. Cere, eyelids, and toes chrome-yellow; iris hazel. Immature birds are browner than the adults, have longitudinal stripes instead of bars on the under surface, and less white on the tail. Young in down white. [W. P. P.]

2. **Distribution.**—To the British Isles this species is only an irregular winter visitor, sometimes arriving on our east coasts in great numbers. On the Continent its main breeding grounds are in Scandinavia and North Russia. In Sweden it ranges south to Jemtland, about 65° N lat., and in Norway is generally distributed north of the Arctic Circle, and occurs more sparingly on the high fjeld south to lat. 59½°. In Finland it is found as far south as Pudasjärvi, and north of these limits ranges to the coasts of the Arctic Ocean. It is said to breed irregularly in the Baltic Provinces, and it has been frequently stated that sporadic instances of breeding have taken place in Germany, but further evidence is very desirable

on this point. Eastward it ranges through Northern Siberia, but is replaced by local forms in East Siberia and in Arctic North America. Its migratory movements are irregular, and dependent on the severity of the winter, but it has been recorded as reaching the Pyrenees and the Mediterranean, and in hard winters large numbers pass along the west as well as the east coasts of the Black Sea, and also to the northern shores of the Caspian. [F. C. R. J.]

3. **Migration.**—A bird-of-passage on its way to and from its breeding haunts in Northern Europe ; a few sometimes pass the winter within our area if unmolested The usual date of its appearance is from 6th October to 12th November, but it has been recorded as early as 15th August (cf. Clarke, *Studies in Bird Migration*, 1912, vol. i. p. 159). It occurs chiefly in the north of Scotland and on the east of Great Britain ; and in some autumns it is comparatively common, *e.g.* 1839, 1876, 1879, 1881, 1892, and 1903 (cf. Nelson, *B. of Yorks*, 1907, p. 328). In 1903 the movement was noted in the south-east of Scotland, in the north-east of England, and southwards to Norfolk, the birds appearing for the most part in the second week of October (cf. Witherby and Ticehurst, *British Birds*, vol. i. p. 318). On the spring passage the species is rare. To Ireland it is a rare visitor, chiefly to the northern maritime districts in October and November (cf. Ussher and Warren, *B. of Ireland*, 1900, p. 124). It frequently occurs in couples or small parties. Most of the birds obtained in the British Isles are immature. [A. L. T.]

4. **Nest and Eggs.**—Does not breed in the British Isles, although erroneous statements have been made to the effect that it formerly bred in the Devonian Peninsula, Yorkshire, and in North-east Scotland. [F. C R J.]

5. **Food.**—Rabbits, leverets, wild-ducks, lemmings, mice, moles, lizards, frogs, carrion. The food of the young is little known. In one case snow-buntings were noted as the chief food (Pearson). [W. P. P.]

THE COMMON AND ROUGHLEGGED-BUZZARDS

[W. P. Pycraft]

From their general appearance, flight, and habits the Buzzards are generally regarded as near allies of the Eagles. They have indeed much in common, but anatomically they prove to be less nearly related thereto than appearances lead us to suppose.

Two species of Buzzard, representing as many genera, are included in the lists of British Birds. One of these has at no time bred with us, in spite of statements to the contrary; the other, happily, still annually rears its young in the wilder solitudes of these islands, though how much longer this will continue to be the case it would be dangerous to prophesy, for their numbers have been reduced to a most lamentable degree. Since Montagu referred to the buzzard as "one of the most common species of falcon we have," a deplorable change has taken place. Slow, and phlegmatic in habit, it was always a bird easy of approach, so that when what the late Howard Saunders described as "the increase of Pheasant-worship," and E T. Booth as "the rage of Game-preserving," set in, the doom of the buzzard was sealed. To those who have an inherent love of wild things and wild places, the spoliation of the country to satisfy the thoughtless indifference of the "sportsman" affords a cause for righteous indignation, which is increased by the consciousness of the "unsportsman-like" method of accomplishing this work of destruction. Poison and the pole-trap are the weapons of assassins, yet they have been the mainstay of the game-preserver, and these facts are hard to reconcile with the pretensions to fair-play which one is wont to associate with the word the "sportsman." Not even when the victims of their displeasure are branded as "vermin" is the vengeance meted out mitigated.

It is now more than seventy years since the buzzard bred in Norfolk and other eastern counties. Partridges and ground-game then as now abounded, and this is at once a sufficient proof the existence of buzzards was not inimical to a good head of game.

Macgillivray, commenting on the charge of sluggishness which has been made against the buzzard, remarks that it is "satisfied with a sufficiency of food, and when they have no curiosity to satisfy, nor any amusement to engage in, they naturally take their rest. . . . Though neither heroes nor sages, they live quite as comfortable and enjoy life quite as much as if, like the goshawk, they were to keep the farmyard in perpetual terror, or like the eagle to soar beyond the clouds . . . to gaze on the unveiled splendour of the sun."

The buzzard, or as it is more often called, the "common buzzard," affords an interesting contrast with its relative the roughlegged-buzzard in point of haunts, since the former seems to be the more adaptable species, contriving to find congenial quarters either in unfrequented moorlands, large woods, or marshy places, while the more eagle-like rough-legged species shows a marked preference for marshy places, and seems to avoid woods. In England, however, it evinces a decided preference for rabbit-warrens, which are the reverse of marshy.

In their flight the two species resemble one another, and both are fond at times of soaring high in air in small parties, affording a spectacle never to be forgotten by those who have had the good fortune to watch it. On the whole the gyrations of the rough-legged species are generally regarded as the more impressive, and while turning and twisting in mid-air the white at the base of the tail forms a conspicuous feature.

As might be supposed, in their choice of food the two species resemble one another, but the common buzzard seems again to be the most able to make shift in time of scarcity, since it will not disdain to eat even earthworms Naumann relates an instance of a common buzzard which in its dying throes ejected a huge bolus of earthworms, most of them uninjured, as was shown by the fact that they quickly strove to scuttle underground again. Moles, he also remarks, they are fond of, since, to procure this prey, they will watch patiently by mole-runs to pounce down on their victim at the slightest

Plate 147

Common-buzzard

By A. W. Seaby

movement of the ground. Frogs, reptiles, and mice seem to form the staple diet of this species. But grasshoppers and other insects are eaten, and the spines of the hedgehog have also been taken from the stomach. The larder round the nest affords a good index of the diet, and even where there are young to be fed birds are conspicuous by their absence. Besides, writers from Macgillivray onwards have enlarged on the benefits conferred by this species in killing of weakly individuals of all kinds, and the consequent advantage of a pair or two of buzzards on grouse moors. Its rough-legged kinsman seems, however, to prefer larger game; for rabbits it evinces a decided partiality; water-fowl are also eaten; but so also are reptiles and frogs, while on the Continent lemmings furnish no inconsiderable portion of its daily fare.

Of the courting habits of these birds we know nothing. With the common buzzard, at any rate, the male "takes a share in the incubation, and both sexes take part in the feeding of the young. If the hen be killed the male will carry on the work of feeding his offspring alone, wherein he differs from the sparrow-hawk, which, in like circumstances, seems always able to immediately provide himself with another mate, who at once takes up the work in hand—whether the later stages of incubation or of feeding the offspring. The young, as probably with all Raptorial birds, accompany their parents for some time after they leave the nest, while they at first gather strength, and later instruction in the art of capturing and killing prey. And in this connection it should be noted that fish-eating hawks and eagles do not seem to adopt any method of speedily killing their prey, but begin to tear it in pieces at the most convenient place. Such as feed on warm-blooded animals, on the other hand, seem invariably to kill the victim at once, either nipping with the beak or thrusting the great hind claw into the brain. This, doubtless, is done, not from any intention of putting the victim out of pain, but rather to prevent its escape.

The common buzzard displays an unusually strong development of the maternal instinct, and of this there are numerous proofs. The best-known instance is that quoted by Yarrell, who relates the case of a female kept in a garden at Uxbridge, which showed an inclination to sit by collecting all the loose sticks she could obtain. Her owner, noticing her actions, supplied her with materials; she completed her nest, and sat on two hen's eggs, which she hatched, and afterwards reared the young. For some years afterwards she thus hatched and brought up a brood of chickens annually. One summer, to save her the fatigue of sitting, some young chickens just hatched were put down to her, but she destroyed the whole. Her family in June 1831 consisted of nine. When flesh was given her she was very assiduous in tearing and offering it as food to her nurslings.

More surprising still is the apparently emphatic and gruesome contradiction of the statement, "Birds in their little nests agree," at any rate in the case of the common buzzard, for it has been frequently remarked that whereas, while three eggs are commonly laid, as commonly only one young one is reared. Dr. J. H. Salter supplies a possible key to the mystery.[1] He remarks that the eggs are incubated as they are laid, and in consequence the first hatched is some days older than the last, and consequently stronger, and he suggests that when food, as in the hills, is by no means over-plentiful, the young are never fed to repletion. Thus the larger and stronger bird gets the lion's share of what comes to the nest, and the younger and weaker are made still weaker by the rapacity of the elder bird. Soon a tragedy happens. After some unusually long interval between meals the elder brother eats the younger, and presently the second occupant of the nest goes the same way, thereby realising the *Yarn of the Nancy Bell.* This interpretation seems to receive support from the fact that in the valleys, where food is plentiful, these grim domestic tragedies do not take place, all the youngsters being reared. On the other hand, it may be that, as in the case of many other species, the younger birds have simply died from lack of sufficient food, and have, in consequence, been removed from the nest by the parents.

---

[1] *Zoologist*, 1904, p. 101

THE KITE

[ORDER. *Accipitres.* SUBORDER: *Falcones.* FAMILY: *Buteonidæ.*
SUBFAMILY: *Milvinæ*]

PRELIMINARY CLASSIFIED NOTES

[F. C. R. JOURDAIN. W. P. PYCRAFT. A. L. THOMSON]

KITE [*Milvus milvus* (Linnæus); *Milvus ictinus* Savigny. Red-kite, red, fork-tailed or salmon-tailed glead, puttock. French, *milan royal*; German, *roter Milan*; Italian, *nibbio reale*].

1. **Description.**—The kite may be distinguished at a glance by its deeply forked tail and the chestnut colour of the tail. The sexes are alike, and there is no seasonal change of plumage. The male has the head and neck white, with black striations; mantle rufous brown; tail rufous, and deeply forked; the under parts rust-red, striped on the breast with dark brown. Cere and legs yellow. Iris whitish yellow. Length 22 in. [559·0 mm.] The female differs from the male in being slightly larger, and somewhat duller in hue. Length 24 in. [609·0 mm.]. Immature birds are much duller, especially in the head, which is of a pale brown with darker striations, and all but the middle tail feathers are barred with black. Young in down white. [W. P. P.]

2. **Distribution.**—Formerly widely distributed in Great Britain, but now confined to mid-Wales, where, owing to careful preservation, about twenty birds still exist. In 1905 only five birds were known, and the species was on the verge of extinction, but it has responded well to the measures taken for its protection. In Lincolnshire the last nest was taken in 1870, and a few pairs lingered till a still later period in Scotland. There is no reliable evidence of its presence in Ireland. On the Continent it ranges north to about lat. 61° in Sweden, but has now become rare in Denmark, and in Russia is only found east to the Tula and Orel governments and the Dnieper River. Over the rest of the Continent it is thinly dis

tributed, but is scarce in the Balkan Peninsula, though common in Spain It also breeds in North-west Africa, east to Tunisia and in the Western Canaries, and in small numbers in Palestine and Asia Minor, but not in Egypt. Our British-breeding birds are sedentary, but those from the north of Europe migrate southward in winter, but appear not to cross the Sahara, though this species has been recorded from Gambia, and Mr. M. J. Nicoll has seen two in Egypt. [F. C R. J.]

3. **Migration.**—A rare resident in mid-Wales, and occasionally occurring as a visitor from the Continent on the east of Great Britain. There are also a few Irish occurrences on record. [A. L. T.]

4. **Nest and Eggs.**—Like many of the larger birds of prey, the red-kite is often content to adopt the old nest of some other bird, so that there is considerable variation in the size of the nest, and in many cases nothing but the internal lining is contributed by the birds themselves. In the British Isles and on the European Continent it nests almost invariably on trees, but in the Atlas nests have been recorded in niches of cliffs. Where available a tall tree is generally selected, and the nest is lined with bits of paper, rags of all kinds, bones and dry dung. (Pl. LXIV.) The share of the sexes in providing this material is apparently unrecorded. The eggs are, as a rule, three in number, sometimes only two, and rarely four, and are laid at intervals of two or three days. They are dull white or bluish white in ground-colour, with blotches, smears, and often characteristic hair lines of red-brown; but often one egg in a clutch is unmarked, and sometimes a nest may be met with in which all the eggs are of this type. Average size of 100 eggs, 2·19 × 1·76 in. [55·7 × 44 9 mm] From the scanty evidence available it appears that incubation is performed by the female bird, who leaves the nest to feed at times, particularly in the early morning, about half-past three A.M. In Tiedemann's Table the period is stated as 21 to 24 days, but this is probably erroneous, and I believe that it lasts for a full month. In South Spain eggs may be found from mid-March (exceptionally it is said even in January), but in Wales the more usual time for full clutches is about the second week in April (rather earlier than the buzzard), and in Germany from mid-April to the beginning of May. Only a single brood is normally reared, but second layings may sometimes be found when the first clutch has been destroyed. [F. C. R. J.]

5. **Food.**—The main food of the Welsh kites consists of rabbits, but other small mammals such as squirrels are occasionally picked up, and owing to its greater powers of flight many birds are captured. E. T. Booth found in the nests in Scotland lapwings, grouse, and the young of curlew, duck, and pigeons;

and jackdaws have been found in the nest in some numbers in Wales. Both the grass snake and the adder, as well as frogs and lizards, form part of its diet, and on the Continent young hares, moles, mice, voles, many species of birds, snakes, frogs, lizards, orthoptera, beetles and worms (Naumann), as well as almost every kind of carrion. [F. C. R. J.]

6. Song Period.—Mostly silent save during the period of reproduction, differing in this respect widely from the black kite, which is rather a noisy bird. [F. C. R. J.]

The following species are described in the supplementary chapter on "Rare Birds":—

Black kite, *Milvus korschun* (Gmelin); [*Milvus migrans* (Boddært)].
[American swallowtailed-kite, *Elanoides forficatus* (Linnæus).]
[Blackshouldered-kite, *Elanus cæruleus* (Desfontaines).]
Honey-Buzzard, *Pernis apivorus* (Linnæus). [F. C. R. J.]

THE KITE

[F. C. R. JOURDAIN]

The last British haunt of the kite is a vast tract of moorland and rough pasture in Southern Wales, broken here and there by small plantations, in which oak predominates. As there is little game in this country and the population is very sparse, there seems no reason why the stock should not be maintained for many years to come. From about 1893 to 1903 the nests were remorselessly harried by dealers, and occasionally by the local farmers or egg-collectors, and it is probable that not a single young bird was reared during this period. The first attempts at protection were made in 1903, but were unsuccessful, and in 1905 the stock was believed to consist of five birds only. Since that time a slow but steady increase in the numbers has taken place, till at the present time over twenty birds are known to exist. Some trouble has been experienced of late years from the depredations of carrion crows on the eggs, possibly because the presence of the watcher causes the sitting bird to leave the nest more frequently than otherwise would be the case.

As a rule the kites return to the old breeding-places year after year. They are great travellers, covering an enormous extent of ground, and often flying low with a gliding flight, alternating with occasional flaps of the long wings. They are also remarkably silent birds, and it is rarely that one hears the cry. The only note I have heard from the old birds is a soft "*wheeo, wheo,*" or as Mr Walpole Bond writes it, "*wheiou, whew, whew, whew.*" It is totally different from the very characteristic "whinnying" note of the black-kite, and comes much nearer to the mew of the common buzzard, "*pee-yeou, pee-yeou,*" etc., but is softer, thinner, and pitched rather higher. Like most Accipitrine birds, the kite is fond of soaring high in the air over the place which it has selected for breeding purposes early in the spring Here its marvellous powers of flight are well illustrated, and the long forked tail is in constant use, now deflected on one side, now on the other, according to the direction of the curve on which it is travelling

The old nest is gradually built up with sticks and rubbish of all kinds: big rolls of wool are almost invariably found in Welsh nests, and bits of rabbit skin and fur, bones, paper, rags, and clumps of dead grass are added till the platform attains the required size. Loose bits of paper are also appropriated when available. The eggs are laid at intervals of three days, and apparently incubation is performed either entirely or almost entirely by the female bird. In one case where the nest was being closely watched shortly before hatching, the female used to leave the nest to feed between 3.30 and 4.30 A.M. Additions are not infrequently made to the nest while incubation is going on—at any rate in the earlier stages, and these are probably the work of the male.

When the young are first hatched the female continues to brood over them, only leaving for short intervals for food, often at about 6 A M., and generally returning in about half an hour. The male bird keeps close at hand and roosts close to the nest. For the first week or two but little food is brought to the nest, but when the young are a fortnight old the supply is greatly increased, both parents working hard to supply the larder. The principal food is rabbits, but chickens are not infrequently brought, and at one nest there were many jackdaws lying about.

The young seem to be more peacefully inclined than in the case of the buzzard, and sit contentedly together in the nest side by side. They are pretty little creatures at this early stage: the down on the head and breast is white, and on the top of the head it is rather long and stands upright, forming a kind of crest. On the back and wings the down is a delicate pale brown. In one Welsh nest, where the young were hatched on 19th May, they left the nest on 1st July and perched close at hand, which represents a stay of 43 days in the nest. In another case, where the young were hatched about 16th May, they left the nest on 11th July, so that in this case the fledging period was slightly longer.

On first leaving the nest the young take up their position on a branch about a yard or so away, but later in the day retreat and hide themselves. This continues for about a week, when they take to the wing. One young bird returned to roost on the old perch and stayed there for some days longer. In the early morning the cries of the young for food may be heard for some time after they have learned to fly, and while they are still accompanied by their parents.

It is interesting to note that in one case where the male disappeared (having probably been shot or trapped soon after the eggs were hatched), the female managed to rear the young successfully, but they were still in the nest on 25th July

Much of the above information was supplied to me by Professor J. H. Salter, who obtained it from the watchers In South Spain, where this fine bird is common, the female broods over the young in order to protect them from the heat of the sun, and I have known one sit till I was within seven or eight yards of her. The diet here is somewhat different to that of the Welsh kites: as a rule one does not find much food in the nest, but it is by no means uncommon to find remains of snakes and lizards, with sometimes part of a leveret or rabbit. The discarded rags of the charcoal-burners are freely used as decorations to the nest, and more than once we have found empty cardboard match-boxes in the black-kites' nests. High up in the sierras, where rags and paper are not obtainable, the kite has to be content with dry cow-dung and bits of bone. At times the kite will condescend to small game, for I have watched these birds on the Guadalquivir for hours together capturing insects, apparently large beetles, in their claws and transferring them to the beak, without difficulty, on the wing.

THE OSPREY

[ORDER: *Accipitres.* SUBORDER. *Falcones.* FAMILY: *Pandionidæ*]

PRELIMINARY CLASSIFIED NOTES

[F. C. R JOURDAIN. W. P PYCRAFT. A. L. THOMSON]

OSPREY [*Pandion haliáetus* (Linnæus) Fish-hawk, whiteheaded-buzzard; mullet-hawk (Hants). French, *balbusard*; German, *Fischadler*; Italian, *falco pescatore*].

1. **Description.**—The osprey may always be distinguished by the blue colour of the cere and legs, the horny spikes on the sole of the foot, and the reversible hind-toe. There is no seasonal change of plumage. The male has the head white, striated on the crown with dark brown, and with a broad bar of dark brown running from the hind-neck forwards to the eye. The rest of the upper parts are of an umber-brown glossed with purple; the under parts white, with a band of dark brown across the base of the neck. Cere and legs greenish-blue. Iris yellow. (Pl. 151.) Length 22 in. [559·0 mm.]. The female differs from the male in being rather larger. Length 24 in. [609·0 mm.]. Immature birds have pale edges to the feathers of the upper parts, and a barred tail. The young in down is of a chocolate-brown colour with a conspicuous median dorsal stripe of white. [W P. P]

2. **Distribution.**—In Great Britain the osprey is now on the verge of extinction as a breeding species. Formerly it was a not uncommon summer resident on many lochs in the Highlands of Scotland. Particulars of many of these deserted sites will be found in the *Fauna of the North-west Highlands and Skye*, pp. 178-206. The two best known nesting-places (Loch Arkaig and Loch-an-Eilean) are both now deserted. Previously to 1860 it was known to breed also in south-west Scotland, and according to Macpherson it nested in the Lake District up to the end of the eighteenth century. On the Continent it is thinly distributed in suitable localities from Lapland and North Russia to the Mediterranean Islands

and the Black Sea, but does not breed in France or the Low Countries, and is practically extinct in Denmark. Formerly it was common on the Danube, but is now quite scarce. In Africa it is found on the Atlantic Isles and south to the Cape Verde Isles on the west side, while on the east side it is common in the Red Sea and the north-east coast of Africa. In Asia it is widely distributed, south to Arabia, India and Ceylon, and east to Japan, China, Formosa and Hainan, while allied races are found in the Papuan Islands, Australia and North America. North European birds migrate to tropical Africa in winter, but Mediterranean birds are resident. [F. C. R. J.]

3. Migration.—A very rare resident, and a cold-weather visitor from Northern Europe. The passages, of which the autumnal is the most marked, occur chiefly in September and October, but sometimes lasting till 17th November, and in May and early June (cf. Clarke, *Studies in Bird Migration*, 1912, vol. i. p. 135). Coasts and inland waters are both visited. The immigrants are immature birds for the most part. [A L. T.]

4. Nest and Eggs.—Nests built in trees are often very bulky, and are occupied year after year by the same birds if undisturbed. In Scotland most of the nests were placed on low rocks or islets in lochs: in one or two cases on the walls of old castles in similar situations When placed in trees, a Scotch fir was usually selected. On the Continent nests have been found on ledges of high cliffs, and in the Red Sea district even on the ground or on the roof of an old hut, while the North American birds have been known to build on the roof of a shed, on a pole set up for that purpose, and frequently on the ground. The materials used in building are sticks, mixed with all kinds of flotsam and jetsam, moss, turf, sea-weed, bones, grass, wool, etc. (Pl. LXIV.) The share of the sexes in providing material appears not to be recorded, but I believe that the male bird, at any rate, brings boughs to the nest, and probably also the female. The eggs are usually two or three in number, rarely four. On one occasion seven eggs (from which four young were reared) were found in one nest in Rhode Island, N. America, but these were almost certainly laid by two females. In appearance the eggs are very beautiful, the ground-colour being white, or pale yellowish, blotched with deep red-brown or purplish brown, and having underlying shellmarks of ashy violet. On an average the eggs of the European form show darker, more chocolate-coloured and less reddish markings than those of the American form. Average size of 100 eggs, 2·42 × 1·82 in. [61·6 × 46·3 mm.]. According to observations made on the American race, the incubation period lasts about four weeks, 24 to 28 days, according to Mr. W. W. Worthington, and is chiefly performed by the female, who is, however, relieved for short periods by her mate. In Scotland the eggs were usually laid about the last days of April or the beginning of May, and about the same time in Germany, but in the Mediterranean it breeds about mid-April, and late in May or even in June in Northern Europe. Only one brood is reared in the season. [F. C. R. J.]

5. **Food.**—Almost entirely fish; occasionally frogs, and, in America, water-snakes. The young are fed by both parents on fish. [W. P. P.]

THE OSPREY

[W. P. Pycraft]

At no time did the osprey breed in any numbers in our islands, and the wilder parts of Scotland afforded the most suitable retreats Why, before the days of persecution, it should have failed to establish itself in large numbers it is difficult to understand, since in North America it is gregarious, as many as three hundred pairs having been seen nesting on one small island. This is a very remarkable fact, since Raptorial birds, for obvious reasons, avoid the neighbourhood of their own kind. It is explained of course by the fact that this species feeds almost entirely on fish, of which the supply is almost inexhaustible, so that there is no struggle for food-supplies The roughened sole of the foot, which we have already noted in the sea-eagle, is in the osprey even more marked, and in addition we find the hallux reversible, as in the Owls. Whether this affords a better grip of slippery prey, such as fish, is conjectural.

As everybody knows, the osprey seizes its prey by a tremendous plunge, equalled only by that of the gannet, but whereas in the latter the beak is the instrument of capture, in the osprey the feet are used. It may well be that the enormous width and peculiar shape of the pelvis in the osprey are adaptations to this mode of capture; no other Accipitrine bird at anyrate displays a similar modification. As to the courting habits of the osprey our information is *nil.* But we are especially indebted to Dr. P. H. Bahr and Mr. C. J. Abbott for their vivid accounts of the osprey during the breeding season in New Jersey, where there is a nesting colony of some three hundred pairs! Most of the nests surveyed were on the ground, but many were in trees. In all cases they were very bulky structures, and the outworks of those lodged in trees had been seized upon by purple grackles and sparrows as eligible sites for their own untidy nurseries!

The ospreys fished chiefly during the early mornings and evenings, circling round at no great height from the water, and carefully

Plate 151

Osprey catching fish

By A. W. Seaby

scrutinising the surface. Whenever a fish was sighted the bird would almost close its wings and descend with a resounding splash, for the moment quite disappearing, to emerge a second later with its victim in its claws. But their behaviour after the capture was somewhat extraordinary, since instead of hurrying back to its young with the prize, the captor would sail round for hours in an aimless sort of way with the fish grasped firmly by both feet round the middle, the head dangling downwards—and carried, be it noticed, foremost, as offering least resistance to the air, and both these authors, it is to be remarked, agree on this point. Small fish would be carried in one foot, and sometimes it would be changed from one foot to the other during flight. The indifference displayed by the parents on effecting a capture seems to have been infectious, for the young evinced no desire to eat when food was eventually brought to them. Dr. Bahr never once saw a bird offer to feed its young during his week's sojourn in the colony:—"Hour after hour they would stand on the edge of the nest with their prey in their talons, contemplating their perspiring offspring or gazing lazily out to sea, every now and then raising their crest and giving vent to a shriek as a neighbour passed." Mr. Abbott was more fortunate. He saw both male and female feeding the young The prey was held down by the feet, and pieces of flesh were then torn off and given the young But they displayed no interest in the prospective meal, and in many cases full-fledged young would sit, with ruffled plumage and drooping heads, as if overcome with the heat. That these birds suffered from this cause seems evident from the fact that one or other of the parents standing at the nest during the heat of the day would flap lazily out to sea, dangle the legs and tail, and sometimes the tips of the wings, in the water, and returning, would then spread the cool and grateful shade over the nestlings.

But lethargic as these youngsters seemed to be, when approached they became transformed into "regular spitfires," with every feather on end, wings and tail raised, and head lowered. But this was only bluff, for when lifted out of the nest they offered no resistance.

Mr. Abbott comments on the very remarkable fact that, in regard to their coloration, the young in down are longitudinally striped with white on a chocolate ground-colour, forming a pattern which affords a most perfect mantle of invisibility; so much so that it was sometimes difficult to determine, at first sight, whether the nest was tenanted or not. Older birds, fledglings, when approached, feigned death And this ruse failing, they would assume an attitude of great ferocity, only to subside almost at once into the old, death-like, attitude. A further remarkable fact brought to light by Mr. Abbott is that the young, unlike all other nidicolous birds, are hatched with open eyes. Herein they differ from the young, not only of all other Accipitres, but of all other nidicolous birds. And this fact is another indication of the primitive character of this bird. For when lying spread out in the nest they are very difficult to distinguish from their surroundings.

The singular indifference of these birds, both young and old, in regard to food, and their evident trust in protective coloration, seem inexplicable, but these peculiarities may well be intimately associated with behaviour in the past under very different conditions—when enemies of various kinds may have swarmed around them.

On approaching their nests, both authors remark, the old birds would display great nervousness, and would hover high in the air uttering a note like "*killy, killy, killy,*" at the same time flapping their wings and dangling their legs. Anger is expressed by a penetrating shriek sounding like "*kee-kee-kee-kee-ich-ich-ich,*" the last syllables being uttered as if a bone were being coughed out of the throat. When carrying a fish they would call, very appropriately, "*fish-fish-fish.*"

During incubation the male feeds his mate, and when the young appear both parents share the task of feeding them They remain with their parents till the autumn, and are fed for some time after leaving the nest

In regard to the eggs Dr. Bahr comments on one very curious fact, to wit, that they have a very rancid, almost fulmar-like odour, a fact which distinguishes them from eggs taken in Europe.

THE FALCONS

[ORDER: *Accipitres.* SUBORDER: *Falcones.* FAMILY: *Falconidæ*]

PRELIMINARY CLASSIFIED NOTES

[F. C. R. JOURDAIN. W. P. PYCRAFT. A. L. THOMSON]

GREENLAND FALCON [*Fálco rusticólus cándicans* Gmelin. White hawk; Iceland hawk (Shetlands). French, *gerfaut blanc*; German, *grönlandischer Jagdfalk*].

1. **Description.**—The Greenland falcon may at once be recognised by its white plumage and yellow beak; the latter, and the absence of bars on the flanks, distinguish the species at any age. The sexes are alike. (Pl. 150.) Length 23 in. [584 0 mm.]. The adult male ("tiercel") is pure white relieved by a few small black spots, largest on the hinder scapulars, and black tips to the primaries. The cere, the space surrounding the eye, and the legs and toes are yellow, the iris dark brown. In the female the spots are generally rather large and more numerous. In the very young the head is white striated with black, the mantle black, but with each feather broadly margined with white, the tail is crossed by imperfect bars of dark brown, while the breast is marked by large bean-shaped spots of dark brown. As age advances the black and brown areas diminish, the under parts becoming white and the back marked by large butterfly-shaped black spots, which gradually diminish in size. Young in down white. [W. P. P.]

2. **Distribution.**—In the breeding season this race is confined to Greenland, and according to Packard, the Labrador Coast, as well as Hudson's Strait and Baffin Land. It probably also breeds in the Arctic regions of N. America, west to the Commander Isles. In Iceland, North Scandinavia and Russia, the Urals and parts of North Asia, it is represented by allied forms, two of which have occurred in the British Isles. The Greenland falcon only occurs within our

limits in winter and early spring, and chiefly on our western coasts, and has been recorded from Northern France, Belgium, and Germany. [F. C. R. J.]

3. **Migration.**—A winter visitor in small numbers from its far northern breeding-haunts. It is of practically annual occurrence in the north of Scotland, but records grow less frequent southwards through Great Britain, although there are a few even for the extreme south of England (Sussex, Cornwall, etc.). In Ireland it occurs between September and April, rather notably in the latter month, but chiefly in the western maritime counties (especially Donegal, Mayo, and Kerry), a fact which may well be connected with the probable Greenland origin of the movement (cf. Ussher and Warren, *B. of Ireland*, 1900, p. 135; and Ussher, *British Birds*, vol. ii. p. 413). Recorded singly or in couples; most of the examples obtained are immature birds. [A. L. T.]

4. **Nest and Eggs.**—Does not breed in the British Isles. [F. C. R. J.]

5. **Food.**—The main food of the Greenland falcon at its breeding-places consists of guillemots and gulls (*Larus leucopterus* and *Rissa tridactyla*), ptarmigan and lemmings. In Great Britain wild-fowl, puffins and rabbits have been recorded. [W. P. P.]

PEREGRINE-FALCON [*Fálco peregrínus peregrínus*, Tunstall. Cliff-hawk, blue-hawk, duck-hawk, stock-hawk; goshawk (Shetlands), hunting-hawk (Ireland), tiercel, falcon. French, *faucon pélerin*, German, *Wanderfalke*; Italian, *falcone*].

1. **Description.**—The peregrine may always be distinguished from any other of the falcons which breed with us by reason of its greatly superior size; while it may at once be distinguished from any of the larger falcons which occasionally visit us, *e.g.* Greenland falcon, by the fact that the outer is longer than the inner toe. The sexes are similar, and the male is markedly smaller than the female. There is no seasonal change of coloration. The male has the upper parts of a slate-blue, barred and spotted with black; the wing-coverts are darker than the mantle and edged with grey. The tail is grey, barred at the base with black, and with a subterminal black band tipped with white. The throat and fore-breast are white, tinged with buff, while the lower breast and flanks are white with bluish grey tinge and barred with black. (Pl. 141.) Length 15 in. [381·0 mm.]. The cere, a large diamond-shaped area of skin round the eye, the eyelids and the legs are chrome-yellow, while the iris is dark brown. The female is brownish slate above,

and rather more heavily barred below. Length 17 in. [432 0 mm.]. Immature birds have the upper parts of dusky brown, and the feathers margined with rufous, while the under parts are longitudinally striped, instead of transversely barred with black. Young in down white, with the soft parts blue instead of yellow. [W. P. P.]

2. **Distribution.**—In the British Isles the peregrine is still to be found breeding sparsely along the south coast of England, becoming more common on the cliffs of the Devonian Peninsula and in Wales, where it also breeds on a few inland localities. It is necessarily absent from the low-lying east coasts of England south of the Yorkshire cliffs, but survives in small numbers in the Pennine range and is found in the Lake district. In Scotland it is more numerous, especially on the coasts and islands, but is also found inland, and ranges as far as the Shetlands and the outlying rocks of the Hebrides. It is not uncommon on the Isle of Man, and many pairs breed round the coasts of Ireland, as well as in mountain crags inland. Outside the British Isles this race is found on the Continent of Europe from Arctic Norway and the north island of Novaya Zemlia southward to the Mediterranean. Its range also extends over part of Northern Asia, but it is represented by allied races in the Mediterranean and North Africa, various parts of Asia, Australia, and North America east to Western Greenland. It is partially migratory, the young moving south in autumn, and northern birds being migrants, but the Mediterranean race is sedentary. As its name implies, it is a great wanderer, and has occurred in most parts of the world. [F. C. R. J.]

3. **Migration.**—A resident, and a bird-of-passage to and from Northern Europe. The migrants, immature birds for the most part, occur mainly on the east coast of Great Britain between autumn and spring, a few remaining during the winter (cf. Nelson, *B. of Yorks.*, 1907, p. 360, etc.). They are usually recorded singly, but sometimes in twos or threes, and travel by day. [A. L. T.]

4. **Nest and Eggs.**—In the British Isles the nesting-site is almost always on a ledge in the face of a cliff, often very difficult of access. The site is, however, sometimes on quite low rocks, and the species has been found nesting among heather on a low-lying islet. On the Continent it not infrequently breeds on hummocks in marshes, or on the ground in Northern Europe and Asia, but in the forests of Central Europe it is most frequently found breeding in one of the many old nests of Raptorial birds which are to be found in the trees. Strictly speaking, there is no nest, the falcon merely making a circular hollow with her breast in turf, or the flattened surface of the old nest of crow, raven, heron, buzzard, goshawk, etc. When

on hard rock ledges or buildings no nest whatever is made. (Pl. LXIV.) Normally the eggs vary from three to four in number, but rarely instances of five have been recorded, and six young are said to have been found in one nest in Wales. The eggs are often very handsome, varying from light tawny pink or orange-red to deep brownish red or dark purplish brown. Occasionally a good deal of white ground is visible, but in many eggs it is completely obscured, while a few very dark blotches or spots of almost blackish brown pigment are to be seen in some cases. Average size of 223 Irish eggs, 2·01 × 1·59 in. [51·1 × 40·3 mm.]. Frequently the same spot, or an alternative site close at hand, is occupied year after year. Incubation is performed by both sexes, and if one of a pair is shot, the survivor finds a fresh mate in a remarkably short space of time. They are laid on alternate days, but information as to the incubation period is very scanty. Probably Macgillivray was approximately right in estimating it at a month, and it is certainly not less than three weeks. The eggs are generally laid about the second or third week of April with us, exceptionally as early as the end of March. When the first clutch is taken another is laid about three weeks later, but only one brood is reared during the season. [F. C. R. J.]

5. Food.—Puffins and other sea-birds, pigeons. Also choughs, jays, magpies, crows, rooks, starlings and other small birds; ducks and other water-birds; various species of Waders; rabbits, rats. Both parents take part in feeding the young; and fur and feathers are removed from all prey till the young are fledged. [W. P. P.]

HOBBY [*Fálco subbúteo* (Linnæus). Van-winged hawk (Hants); riphook (Berks). French, *hobereau*; German, *Lerchenfalke*; Italian, *lodolaio*].

1. Description.—The hobby is a peregrine in miniature, but may always be distinguished therefrom by the long red shank feathers. The sexes are alike, and there is no seasonal change of coloration. The male has the upper parts slate-grey, darker on the head; the cheeks and throat white, the under parts buffish white, with broad longitudinal black stripes, instead of transverse bars of black, as in the peregrine. The long shank feathers, crissum, and under tail-coverts are rust-red. The cere, eyelids and legs are chrome-yellow, the iris dark brown. (Pl. 149.) Length 12 in. [305·0 mm.]. The female differs from the male in having the elongated, rust-coloured shank feathers striated with black. Length 14 in. [355·0 mm.]. Immature birds have the upper parts brown, each feather margined

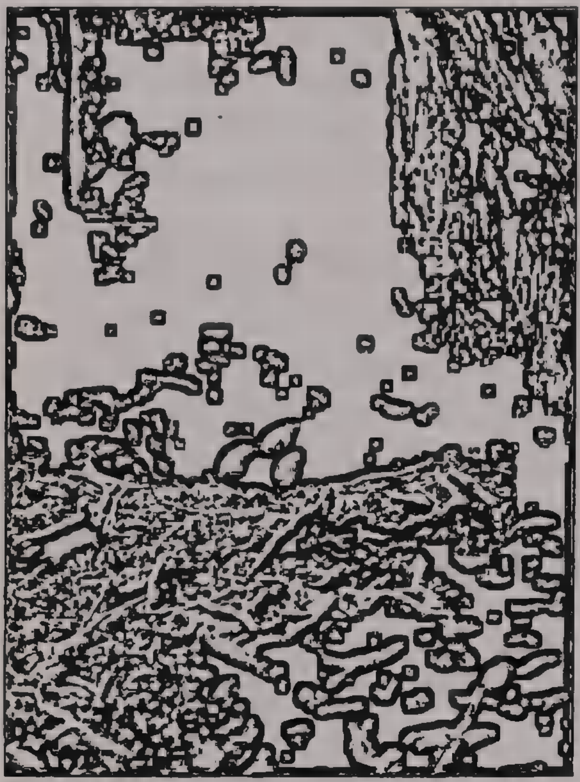


Photo by R. Fortune

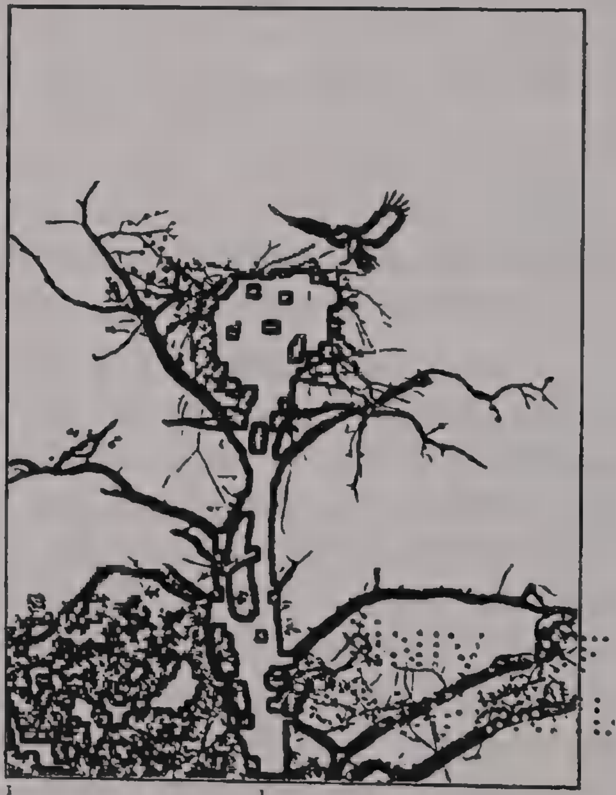
Peregrine Falcon's nest and eggs on ledge of cliff

Photo by R. Fortune

Young kestrels in [illegible]

Photo by F. We

Merlin nest and young on ground



Osprey alighting on nest

with ochreous-white, while long feathers of the shanks, and the under tail-coverts are of a pale rufous. Young in down white. [W. P. P.]

2. **Distribution.**—A summer resident in the south of England, but not common, though it breeds fairly regularly from Devon, Gloucester and Salop in the west to Lincoln and Norfolk on the east, but is decidedly scarce in the north Midlands. It has, however, bred occasionally in Cheshire, Derbyshire, and Yorkshire, and on one occasion is known to have nested as far north as Perth (Sir E. Newton), but as it is a late breeder is probably sometimes overlooked. It has not been found nesting in Ireland, but on the Continent its breeding range extends as far as the Arctic Circle in Lapland and lat. 65° N. in Russia, south to the Mediterranean and the Black Sea, but it is scarce in S. Spain and Greece. It is also found in Western Asia, but is replaced by an allied race in the forests of North-west Africa as well as in parts of Asia. During the winter months it migrates to Africa, ranging south to Cape Colony and Natal; and to North-west India in Asia. [F. C. R. J.]

3. **Migration.**—A summer visitor, arriving in England during the second half of May and leaving again in September. But there are many winter records, which perhaps point to a slight passage from Northern Europe. The species is rare in Scotland even as a migrant. It is a rare casual summer visitor to Ireland, chiefly to the south-eastern counties (cf. Saunders, *Ill. Man. B. B*, 2nd ed, 1899, p. 349; and Ussher and Warren, *B. of Ireland*, 1900, p. 144). [A. L. T]

4. **Nest and Eggs.**—The hobby does not build a nest for itself, but takes possession usually of an old nest of crow or magpie, and has been known to dispossess the long-eared owl. Fresh oak leaves have, however, been found as a lining, a habit which is recorded in the case of other Raptorial birds. Normally the eggs are three in number, sometimes four, and occasionally only two. In the rare cases where five are said to have been found it is possible that there may have been confusion with the kestrel. As a rule, they are fairly distinguishable from those of the other small falcons by their lighter and more yellowish colouring, though occasionally clutches may be found which cannot with certainty be distinguished from those of the kestrel. Such eggs, however, require the most careful authentication. They are generally mottled all over with light yellowish or pale brownish red, occasionally showing darker markings, though some eggs are more boldly marked with reddish brown. A few dark reddish markings are sometimes found, and some eggs show much of a whitish ground-colour. Average size of 100 eggs, 1·62 × 1·28 in. [41·3 × 32·7 mm.]. Information as to the share of the sexes in

brooding is defective, but there is no doubt that a considerable share is taken by the female, though whether the male also takes part is not certainly known. Dr. Holland estimates the incubation period at three weeks, but this is merely approximate. The hobby is a remarkably late breeder, and rarely lays before the end of May, and generally not till early June, while fresh eggs have been taken late in June. Only one brood is reared in the season, though a second clutch may be laid when the first has been destroyed. [F. C. R. J.]

5. **Food.**—Dragon-flies, cabbage and other butterflies, cockchafers and other beetles, especially *Geotrupes stercorarius*, during the summer, varied by an occasional swift, swallow, or martin. During the rest of the year larks, starlings, and other small birds. The young are fed by the female. [W. P. P.]

MERLIN [*Fálco régulus* Pallas; *Fálco ǽsalon* Tunstall. Stone-falcon, little blue-hawk; maalin (Shetlands). French, *émérillon*; German, *Zwergfalke*; Italian, *smeriglio*].

1. **Description.**—The merlin, on account of its small size, cannot be mistaken for any other of our British falcons. The male has the upper parts slate-blue, paler on the rump. The shafts of the feathers are black, producing a finely striated appearance. The under parts are white, tinged with rufous, and broadly striated with black. The tail is tipped with white, and has a broad subterminal band of black. The cere, eyelids, and legs are yellow, the iris dark brown. (Pl. 115, vol. iii. p. 310.) Length 10 in. [254·0 mm.]. Very old females are like the male; more commonly the female has the upper parts brown, the under parts whitish, with broad longitudinal streaks of dark brown. Length 12 in. [305·0 mm.]. Immature birds are brown above, each feather margined with pale sandy rufous; the under surface whitish, with broad longitudinal stripes of reddish brown, and black shaft-stripes; the flanks, however, are reddish brown, marbled with large white spots. Young in down greyish white. [W. P. P.]

2. **Distribution.**—In Great Britain the merlin is said to have bred on Exmoor, but is known with certainty to nest in Wales from north to south, including Anglesey, Salop, and along the Pennine range south to north Derbyshire, as well as on the outlying spurs and moors to the north of this point. In Scotland it becomes more numerous, not only on the mainland but also on the Hebrides, Orkneys and Shetlands. In Ireland it is tolerably common in the hills and also in some of the red bogs of the central plain according to Ussher. Outside the

British Isles the merlin is resident and nests in the Færoes, and occurs in small numbers during the summer in Iceland, and on the Continent breeds in Scandinavia, Finland and North Russia. It has been recorded as far north as 69° N. lat. in North-east Russia, but has not been found breeding in the Urals at present north of lat. 57°, though further observation will no doubt extend its range northward. It rarely breeds as far south as the Baltic provinces, St. Petersburg, Grodno, Chernikov, Smolensk, and N. Tula. According to the older writers it breeds sporadically in Northern Germany, the Alpine districts of Central Europe and the Pyrenees, and this is accepted by Saunders, but modern ornithologists have so far failed to confirm these statements, which must be regarded as requiring confirmation. In Asia it is found across Siberia to Ussuria and even Japan and a light form is said to inhabit the Kirghiz Steppes. In the British Isles it is only partially migratory, but North European birds migrate through Europe to North Africa and the Nile valley to Senaar, while Asiatic birds range southward to North-west India and China [F. C. R. J.]

3. **Migration.**—A resident, and also an autumn immigrant from Northern Europe. On the approach of winter our home-bred birds come down to the lowland and coastal districts, and the species becomes widely distributed. The autumn passage movements take place between 30th August and 12th November, and are apparent on the Yorkshire coast during the first half of October (cf. Clarke, *Studies in Bird Migration*, 1912, vol. i. p. 135; and Nelson, *B. of Yorks.*, 1907, p. 367). There is possibly an autumn immigration from Great Britain to Leinster, but the Irish-bred birds are considered sufficient to account for the numbers seen in the country in winter (cf. Ussher and Warren, *B. of Ireland*, 1900, p. 145). What significance can be attached to the fact that "the proportion of adults to immature birds is unusually great in the basin of the Mediterranean" (Saunders, *Ill. Man. B. B.*, 2nd ed., 1899, p. 351) cannot at present be conjectured. [A. L. T.]

4. **Nest and Eggs.**—As a rule the merlin merely scratches out a hollow among heather on a hillside and arranges a few broken stalks of ling round the eggs It has, however, been known to breed also in old nests of raven (*Zoologist*, 1905, p. 34), and more frequently in those of the carrion crow, while in Scandinavia that of the hooded-crow is sometimes appropriated. Shelves in cliff faces are sometimes used, and Nordling states that a weather-worn woodpecker's hole has been occupied in Finland. In North Wales it has been known to nest in a hollow among the marram grass on sandy ground. (Pl. LXIV.) The eggs are usually four or five in number, but clutches of six have been occasionally met with. As a rule, the

colour is more evenly distributed over the surface than in the case of the kestrel, the ground being generally quite hidden, and the mottling of red-brown or chocolate-red being uniformly distributed. Some eggs are very dark purplish-brown, with but little red showing. Average size of 106 eggs, 1·55 × 1·23 in. [39·3 × 31 2 mm.]. Incubation is performed by both sexes (T. A. Metcalfe) Faber estimates the period at twenty days, but this appears to be improbable, and it is more likely to last for four weeks. In the southern part of its British range the eggs may be found from about the second week in May onward, sometimes not till towards the end of the month; but Saxby says that in the Shetlands eggs may be found from mid-April to mid-May. In Iceland they are laid about the end of May or early in June. Only a single brood is reared during the season, but second layings may be met with after the first has been taken. [F. C. R J.]

5. **Food.**—Larks, pipits, linnets, twites and other finches, blue tit and buntings, thrushes, dunlin, and other small waders, and large moths, especially the "eggers." The young are fed by the female on small birds—finches, larks, and thrushes. [W. P. P.]

KESTREL [*Fálco tinnúnculus* Linnæus. Red-hawk, windhover, stand-hawk, fanner, stannel; crasset-hawk (Devon); maalin (Shetlands). French, *cresserelle*; German, *Turmfalke*; Italian, *cernicalo*].

1. **Description.**—The kestrel may always be distinguished by the chestnut colour of the upper parts and the vinous fawn colour of the under parts. The sexes differ in coloration, and there is no seasonal change of coloration. The male has the head, rump and tail slate-grey, the latter tipped white and with a sub-terminal bar of black; the mantle and wing-coverts are of a mahogany-red colour relieved by spots of black which increase in size in the scapulars and inner secondaries. The throat is white, the rest of the under parts vinous fawn striated in the chest with black, and spotted with black on the flanks. Lower abdomen and under tail-coverts white. Cere, a space round the eye, and legs chrome-yellow, iris dark brown. (Pl. 148.) Length 12 in. [305·0 mm.]. The female has the crown and neck mahogany-red, like the back, and transversely barred with black; the tail is similarly red, closely barred with black; the under parts as in the male, but paler. Very old females tend to resemble the male. Length 12 in. [305·0 mm.]. Immature birds resemble the female, but are somewhat paler. Young in down white. [W. P. P.]

2. **Distribution.**—A common resident in the British Isles, and in some districts where there is little game preservation very plentiful. In the north of Scotland and the Shetlands it is only a summer resident, and is not common, and the same applies to a lesser extent to the north of Ireland. It does not breed in the Færoes or Iceland, but on the Continent ranges to about lat. 68° in Scandinavia and Finland, but only becomes common farther south. In North Russia it is only accidental at Archangel and is absent from the Mezen and Petschora basins, ranging to 61°—60° on the upper Kama. From these limits it is found generally throughout Europe to the Mediterranean and North Africa, but is replaced by sub-specific forms in Madeira, the Canaries, and Cape Verde Islands, as well as North-east and East Africa. In Asia its range extends from the eastern shores of the Mediterranean to Eastern Siberia, but is replaced by allied forms in the Eastern Archipelago, and during the winter Asiatic birds migrate south to the shores of the Indian Ocean. [F. C. R. J.]

3 **Migration.**—A resident, and a bird-of-passage from the Continent. Although the species is widespread over our area throughout the year, many of the birds leave the northern parts of Great Britain and part of Leinster and Ulster on the approach of winter; there is no evidence as to whether any of them leave the British Isles. The autumn immigrants appear on the east coast of Great Britain (apart from exceptional records as early as 9th August) between 25th August and 12th November, but mainly in September; the majority of them, at least, pass on to more southern countries The season of the return passage is from 16th March to 18th May. Like all the Falconidæ, the kestrel is a diurnal migrant for the most part, but Mr. Eagle Clarke saw an adult male continually flying about in the rays of the Kentish Knock Lightship lantern between 8 P.M. and 1 30 A.M on a September night, it travels either singly, or in couples or small groups. (Cf Clarke, *Studies in Bird Migration*, 1912, vol. i. pp. 135, 159, vol. ii. p. 37; Ussher and Warren, *B. of Ireland*, 1900, p. 146; Nelson, *B. of Yorks.*, 1907, p. 37; Ticehurst, *B. of Kent*, 1909, p. 295; etc.). [A. L. T.]

4. **Nest and Eggs.**—The nesting-sites of this species are rather variable. Where cliffs, quarries and high rocks are available the eggs are generally laid in a hollow on a ledge (Pl. LXIV.) Ruinous buildings, church towers, and old mills are also sometimes occupied, and in wooded districts the nests of some other bird, such as magpie, crow, or rook, and old squirrel's dreys are appropriated. Occasionally the eggs may be found in hollows of trees, and in Wicken Fen they have been known to breed on the ground among sedge, while nesting-boxes in trees are sometimes

taken possession of. There is no nest, the eggs being laid on the bare ground, rock, or wood, and in the case of some other bird's nest the top is flattened out. The eggs vary as a rule from four to six in number, rarely seven, but eight have been met with two or three times, and nine eggs were found in one nest in Norfolk on the ground in the Runton district. They are laid at intervals of forty-eight hours, and vary a good deal in appearance, some showing much of the yellowish white ground, and others being completely suffused with colour, which varies from very deep rich red-brown, almost black, to light tawny or reddish yellow. Some clutches only show the light tawny markings, others have various shades of red-brown, while some have only the deep blackish red markings on the white ground A rare and beautiful type shows conspicuous purplish or lilac shell-markings. There is also considerable variation among eggs even in the same clutch. Average size of 160 eggs, 1·52 × 1·20 in. [38·8 × 30·6 mm.]. Incubation is chiefly performed by the female, but the male goes on for a short time when the female leaves the nest (J. L. Bonhote). Careful observations on the duration of the breeding period by J. G. Tuck and others show that it lasts 27-28 days from the laying of the last egg, and the statements that it lasts only for 19 days (Bau) and 21 days (Dettmers) are certainly erroneous. The eggs may occasionally be found early in April in England, but more commonly about the third week in that month or early in May. Only one brood is reared in the season, but if the first clutch is taken a second is subsequently laid. [F. C. R. J.]

5. **Food.**—Chiefly fieldmice, but also small birds, moles, lizards, frogs, cockchafers, grasshoppers, beetles, butterflies, caterpillars and other insects, and occasionally also earthworms and carrion (?). The young are fed on mice, and by both parents. [W. P. P.]

The following species and subspecies are described in the supplementary chapter on "Rare Birds":—

Iceland-falcon, *Fálco rustícolus islándus* Brunnich.
Gyr-falcon, *Fálco rustícolus rustícolus* Linnæus [*Fálco gyrfálco* Linnæus].
American peregrine-falcon, *Fálco peregrínus anátum* Bonaparte.
Redfooted-falcon, *Fálco vespertínus* Linnæus.
Lesser-kestrel, *Fálco naumánni* Fleisch [*Fálco cénchris* Naumann].
[F. C. R. J.]

Plate 148

Kestrels; the male in the foreground

By A. W. Seaby

THE FALCONS

[W. P. PYCRAFT]

There can be no question but that the birds of prey known as the "Falcons" form a very sharply defined group. And if they are to be allowed no more than family rank—and we think this is sufficient—it is a moot point whether the remaining families dealt with in these pages should not be merged into one. That is to say, the Vulturidæ and Pandionidæ should be regarded as subfamilies of the family Buteonidæ. From the evidence of anatomy this course is certainly warranted; but to this point we must return.

Of the nine species of Falcons included in the list of British Birds, but four have ever bred in these islands; the remainder are but casual visitors, and demand no more than a brief notice. Three of these, the Greenland, Iceland, and grey gyr-falcons, have given rise to the most lively discussions as to their claim to rank as species, and it may well be that two of these, the Greenland and Iceland falcons, should be regarded as so many geographical races of a common form, while the grey gyr-falcon is undoubtedly distinct, and may be regarded as a large peregrine. This is the rarest of them, not more than four records of its capture in the British Islands being known. The Greenland falcon is the most striking of all, from the snow-white plumage attained by the adult bird, relieved only by a few black streaks and spots on the upper surface. According to the late Dr. Sharpe the gyr-falcons are to be regarded as giant kestrels, but the coloration of the grey gyr-falcon (*Hierofalco gyrfalco*) does not bear out this contention. All are boreal species, and in their immature plumages are very similar. In their habits they closely resemble the peregrine.

From the whiteness of their plumage, writes Sir John Richardson (*Fauna Borealis*) of the Greenland falcon, they are well adapted for traversing snowy wastes without alarming their prey. Ptarmigan when struck at endeavour to escape by diving instantly into the loose snow, making their way beneath for a considerable distance. Alpine hares and lemmings make up no inconsiderable portion of their food in N.E. Greenland, and the pursuit thereof keeps them in constant enmity with the raven, which also feeds largely on the lemming in these regions. And curiously enough the raven commonly gains the mastery, unless two or more falcons combine against the common enemy. For an account of their breeding haunts we are mainly indebted to Manniche's brief notes.[1] He found the eyries of this bird all placed so as to face north, for the sake of the midnight sun. And round each were enormous heaps of excrement forming ledges of yellowish white, visible at a great distance. The bottom of the nest seems always to be made up of excrement. As to the part played by the two sexes during incubation, and in the care of the young, he says nothing. And no other authors seem to have made observations on this point.

Of our four breeding species the peregrine is the largest, the merlin the smallest. The kestrel, which is the species with which most of us are familiar, differs from the other in its red coloration. In all, the female is the larger, though the disparity between the sexes in the kestrel is hardly appreciable, while in the peregrine it is conspicuous. In the matter of the coloration of the sexes it is significant that in the hobby they scarcely differ, while in the merlin they are very different. Very old females of the peregrine and the kestrel make a close approximation in coloration to their respective mates. These facts bear out the law of succession of plumages which Darwin was the first to indicate, to wit, that new characters are first acquired by the male, then by the female, and finally by the young.

In their habits these four species present some interesting contrasts. The peregrine haunts indifferently the wildest moors and mountains and sea-girt cliffs. In our islands unrelenting persecution

---

[1] Manniche, A. V. L., *The Terrestrial Mammals and Birds of N.E. Greenland*, p. 183.

Plate 149

Hobby and its Young

By G. E. Lodge

will presently leave only the latter as tenable sites for an eyrie. Its double in miniature, the hobby, is a forest bird, but hunts on their outskirts, as its long wings indicate. The merlin seeks the wild moors and mountain wastes as a summer resort, but migrates to lower ground for the winter, and will even take up its residence in church towers in the midst of small towns, feeding on pigeons and sparrows Most versatile and adaptable of all is the kestrel, which finds congenial surroundings and an abundance of food on lonely moors, in rugged country abounding in precipitous cliffs; in low-lying marsh land, or large woods: nor does it shun the habitations of men. Like the peregrine, too, it finds a safe retreat on the rock ledges of sea-girt cliffs.

The peregrine and the merlin are fairly matched in the matter of flight, both being exceedingly fast and agile on the wing, and run their prey to earth. The hobby is swifter than either, since he will take the swift and the swallow on the wing, but he is commonly content with smaller game, not even despising cabbage-butterflies, dragon-flies, and cockchafers. The kestrel differs from all the other falcons in its wonderful power of hanging stationary in mid-air, suspended on pinions vibrating so rapidly as almost at times to appear motionless, the while it is searching the ground below for mice, moles, or frogs, thereby demonstrating the amazing power of sight which, in common with all the Accipitres, it possesses. Cockchafers and other beetles are taken on the wing. Birds rarely are taken by the kestrel, and apart from the evidence of their castings, or pellets, this much is clear from the indifference displayed by small birds as the kestrel passes overhead, when the sparrow-hawk would have thrown the whole community into a state of abject terror.

Having regard to the prowess and vitality these birds display, and to the charm they lend to the landscape, it is amazing that they should be ranked as "vermin" and slain remorselessly, without trial, by those whom we would well have supposed most likely to appreciate their boldness and skill and marvellous vitality. But such is the case, though a measure of forbearance has, during recent years, been extended to the kestrel.

Of the habits during courtship, the period of incubation, and the care of the young, our knowledge is, as usual, of the most meagre and scrappy description. I am therefore the more indebted to Dr. Heatherly for the loan of valuable MS. notes of his, setting forth the results of some laborious days he devoted to observations on a peregrine's eyrie in Cheshire. Dr. Heatherly has done for the peregrine what Messrs. Macpherson and Campbell have done for the golden-eagle.

The particular eyrie which formed the subject of these notes was lodged twenty feet from the top of a granite cliff about a hundred feet high. The eyrie occupied a space of about a yard square, and was protected from above by overhanging ledges, and from below by a sheer precipice. Here, on May 27, he found four young, two males and two females. These were already some days old at the time these observations began, and feathers were just showing on the wings. When first visited they were found crowded together under the ledge to the right of the eyrie, in an apparent endeavour to hide from the intruders. On being dragged forth to be photographed they displayed great resentment, hissing and snapping, and turning over on their backs in order to use the feet as weapons of offence. Nor were they silent during this time, and their yelps were answered by angry cries from the parents of "*aitch, aitch, aitch.*"

This demonstration of parental solicitude is the more interesting because of the contrast in behaviour displayed in like case of the golden-eagle But neither Mr. Macpherson nor Mr. Cameron, it must be remembered, ever touched the young, or compelled them to cry out, and wring forth answering cries from the parent. One may, however, be fairly certain that the old birds would have given tongue in any case on detecting the presence of its arch enemy, man, so near its nursery, for the peregrine is by nature more vociferous than the eagle, as is shown by the manner in which they wheel round and round their eyrie uttering loud cries whenever disturbed, while the eagle retreats in silence, and remains away till it deems it safe to return

By June 4th these youngsters had so far advanced as to be able to move about, though as yet walking unsteadily. One of them had begun to feed itself, holding down its food under its talons, and tearing off flesh with its beak, a feat which the young golden eagle was unable to perform till a relatively much later date. Three days later Dr. Heatherly notes still further progress, the young now standing up and flapping their wings for some seconds at a time, after the fashion already noted in the case of the golden-eagle; but at no time, be it noted, did he observe any attempt at playing on the part of these youngsters, such as Mr. Macpherson witnessed so often in the case of the young golden-eagle. These youngsters, again, would now often stand on one leg, and generally the left, a feat which the young eagle never attempted; but in another particular both eagle and falcon agree, and this refers to the habit common to both, from now onwards, of lowering the wings and covering the prey lest any attempt should be made to steal it.

Both parents took part in the arduous work of foraging for their progeny, and puffins formed by far the largest number of these victims. Young shags were occasionally brought by the tiercel, and occasionally a razorbill was brought. The work of foraging for food began at dawn and ended in the gloaming, about seven meals per diem being provided on the average, which falls short of the two meals per head per day which seemed to be the rule in the eagle household. Birds brought to the young seem always to have been plucked away from the nest, as in the case of the golden-eagle, but the heads were not removed. For a time Dr. Heatherly was under the impression that all birds were decapitated as well as plucked, as with the golden-eagle, but he found afterwards that this was not the case.

Dr. Heatherly records no pigeons were brought to the nest, but

Mr. Forrest remarks that the peregrine is particularly fond of these birds, and will travel miles to find them.[1] The tiercel seems to take special interest in the capture of this prey, and celebrates his success by marked jubilation, flying out to sea with his capture, and calling to his sitting mate, who then quits the nest and flies out to meet him. He then soars up and drops his prize, which is caught in mid-air.[2]

In the case of the golden-eagle it will be remembered the female brooded the young at night, for a time. But whether this is ever done in the case of the peregrine seems uncertain. The young were certainly left to themselves all night in the eyrie watched by Dr Heatherly. He further remarks that no cleaning of the nest is done except occasionally, when remains of uneaten prey are removed. And here it may be remarked that while some of the Raptors seem careful to remove all pellets from the nest, others use them as a lining therefor; the peregrine seems indifferent as to where these castings are dropped. And it should be noted, too, that there is no apparent attempt at concealing the neighbourhood of the eyrie, since the common nesting-place of the adults may generally be readily discovered by the "whitewash" made by the excreta, which, in the birds of prey, are always very fluid Another tell-tale is furnished by the place used for preparing the food for the young, Messrs. Coward and Oldham[3] recording observations they kept on an eyrie: "for a quarter of a mile beyond the nest the top of the cliff was a perfect shambles," the feathers and blood showing where the victims had been plucked. Among the remains they found those of the common tern, pigeon, stockdove, and cuckoo.

Dr. Heatherly records two distinct cries of the young, a whimpering sound, like "*cheers, cheers*," in a loud whisper while being fed, and a yelping noise when alarmed. After feeding, the young would sometimes stand round their parent uttering this whimpering in chorus, and bobbing their heads up and down, the parent responding by similar movements, but in silence.

---

[1] Forrest, *Fauna of North Wales*, p. 335. [2] *Ibid* [3] *Zoologist*, 1904, p. 13.

Plate 150

Greenland-falcon and Ptarmigan
(see Plate 139)

By G. E. Lodge

UNIV. (
CALIFORI

We have already indicated some points which remain to be settled, and there are yet others on which we hope some observer will endeavour to enlighten us. For instance, Are the very young ever brooded? Do the adults give instruction to the young in the art of feeding? Do they shade them from the sun and rain?

The falcons are all exemplary parents. The hobby combines prudence with courage in a most convincing fashion, if we may judge by the case quoted by Seebohm of a pair in a forest near Munich which fed their young by dropping food from a height into the nest placed in a lofty beech in order to avoid being shot by the forester and his overseer, who set themselves the task of watching in turn to shoot them! The marsh-harrier has been known to adopt a similar device. This nest has furnished us with another remarkable fact. Though for eight years in succession both adults were shot, and no young were reared, yet each summer brought a new pair! And similar instances have been recorded in the case of the merlin, and other birds of prey. Generally, of course, only one bird is killed at a time, the survivor speedily finding a new mate; but occasionally both must surely fall. But there must be some curiously fascinating factor about certain nesting-sites which proves an irresistible lure even to the most wary bird.

In the matter of parental care the merlin may be said to agree with the hobby on the one hand and the kestrel on the other, so far as records of the habits of these birds tell us at present, and that is not much. But what seems to have been a kind of nuptial display on the part of the male merlin has been recorded,[1] wherein the bird started suddenly up from a grassy mound, flew close to the ground for about twenty yards, then, soaring up to a great altitude, it hovered for a few seconds, calling "*kek, kek, kek,*" after which a return was speedily made to the ground. But the performance was repeated several times without variation. When the spot was approached a female, which had been sitting on three fresh eggs, was flushed.

---

[1] *Zoologist*, 1904, p. 24.

Mr. S. G. Cummings remarks, of two out of four youngsters in a nest found by him, that their tongues were tipped with a large greenish grey scale . . . in the remaining two the scale had apparently been shed. Nor was this an isolated case, for in another nest of four, all very young birds, each tongue was so tipped. We suspect that subsequent observation will show that this appearance was due to coloration only

In one point the merlin differs conspicuously from the kestrel. The former, when its eggs or young are threatened, protests with loud cries; the kestrel suffers in silence, or at anyrate but rarely gives tongue under the circumstances.

According to Seebohm, when the kestrel appropriates the nest of the magpie, it provides a bed for its eggs of its own castings or pellets, which are added to daily.

THE GEESE

[ORDER: *Anseriformes.* SUBORDER: *Anseres.* FAMILY: *Anatidæ.*
SUBFAMILY: *Anserinæ*]

PRELIMINARY CLASSIFIED NOTES

[F. C. R. JOURDAIN. W. P. PYCRAFT. A. L. THOMSON]

GREYLAG-GOOSE [*Ánser ánser* (Linnæus); *Ánser cinéreus* Meyer. Grey-goose (generic). French, *oie cendré*; German, *Grau-Gans*; Italian, *oca selvatica*].

1. **Description.**—The greylag-goose is to be distinguished by the white nail of the beak, which else is flesh-coloured, the flesh-coloured legs, and the light ash-grey of the lesser wing-coverts. The sexes are alike. (Pl. 152.) Length 34 in. [863·0 mm.]. The upper parts are of a light greyish brown, paler tips to the scapular and interscapular feathers, giving the back an irregularly barred appearance. The major coverts and secondaries have narrow white edges. At the base of the beak a narrow white bar is often present; the upper and under tail-coverts are white. The breast is of a light greyish brown obscurely barred with dusky bands. Immature birds are somewhat darker than the adults, and lack the bars on the abdomen. The young in down are of an olive-brown colour above, tinged on the forehead, sides of the head, hind-neck, fore-breast, and flanks with greenish yellow. The rest of the under parts yellowish white. Beak and feet flesh-coloured. [W. P. P.]

2. **Distribution.**—In the British Isles the greylag is now confined to Scotland, although a colony of semi-domesticated birds exists at Castle Coole in Ireland, and formerly it bred in some numbers in the eastern counties of England, surviving till the early part of the nineteenth century in Lincolnshire. In Scotland it breeds in Ross, Caithness, and Sutherland, and of late years has shown a tendency to increase its range. It also nests in some of the Inner Hebrides, and in some

numbers in the Outer Hebrides, while in 1904 a pair is said to have bred in the Orkneys. Outside the British Isles it nests in Iceland, but has ceased to do so in the Færoes, while a few pairs may still survive in Friesland and Denmark, and it is found locally in North Germany. The records of breeding in South Spain are only due to pricked birds, but it is found in the Danube valley, and is common in the Dobrogea, and in Russia ranges south to the Volga, the Caucasus, Transcaucasia, and the Kirghiz Steppes, but is not found north of 59° in the Perm government, although common on the coasts of Finland and ranging north to the Varanger Fjord, as well as in Scandinavia up to the North Cape. In Asia it ranges across the continent, south to Transcaspia, North Persia, Yarkand, and Mongolia, and east to Ussuria and Kamtschatka, but is not found northward of the Arctic Circle. The winter movements extend south to the Mediterranean and North-West Africa, Central India and China, and it has occurred as a casual on the Azores and Madeira. [F. C. R. J.]

3. **Migration.**—A resident in small numbers, but rather more abundant as a winter visitor and bird of passage from the north, arriving exceptionally as early as 21st August, but more usually between 24th September and 13th November, and leaving at the end of April or the beginning of May (cf. Clarke, *Studies in Bird Migration*, 1912, vol. i. p. 159). As a truly wild bird its only British breeding-places are in the Hebrides and the North-west Highlands, while in winter it is uncommon on most parts of the British coasts, although numerous in a few localities. It is said to be visiting the Solway in increasing numbers, and it is also partial to some districts of East Leinster and to the lower Shannon. But most of the birds seem to pass on to more southerly winter quarters. (Cf. Ussher and Warren, *B. of Ireland*, 1900, p. 174; Patten, *Aquatic Birds*, 1906, p. 55; and Gladstone, *B. of Dumfries.*, 1910, p. 239.) Gregarious. [A. L. T.]

4. **Nest and Eggs.**—The usual site for the nest in Scotland is among deep heather, often on islands, sometimes sheltered by a boulder, less commonly in coarse grass or rushes. Exceptionally it has been known to breed on a ledge in the face of a cliff. On the Continent it has been known to breed in an old heron's nest in Hanover, while in the delta of the Danube a floating nest like that of a grebe is built of fragments of reeds and other vegetable matter. Sometimes very little material is used, and the nest is little more than a scrape, lined with down from the goose, but other nests are comparatively bulky, and consist of tufts of dead grass, bits of heather, moss, etc., mixed with down. (Pl. LXV.) The eggs are generally 4 to 6 in number, less often only 3, or even 7 or 8. The supposed instance of 12

PLATE LXV

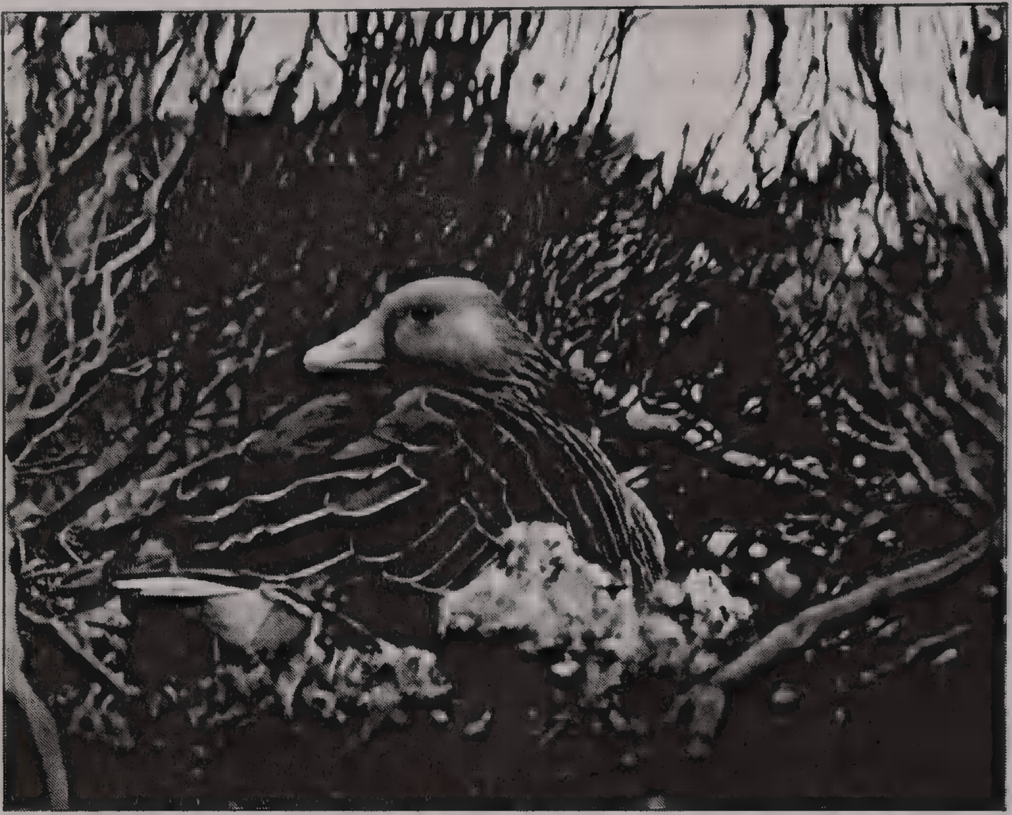


Photo by J. C. Crowley

Greylag-goose on nest in heather (Scotland)

Phot

was probably due to two geese laying in one nest. When fresh laid they are a dull yellowish white, but soon become stained by the sitting bird. Incubation is performed by the female alone, and lasts 28 days. (Plate S) Average size of 111 eggs, 3·43 × 2·3 in. [87·1 × 58·5 mm.] The eggs are generally laid in Scotland by the middle of April, occasionally not till the end of the month, and only a single brood is reared in the season. In Northern Europe fresh eggs may be found as late as the end of May or even early in June. [F. C. R. J.]

5. **Food.**—Corn in cultivated districts, grass, and roots, and the tender shoots of water-plants. The young feed on bog-nuts and various water-plants, as well as on aquatic insects, and are accompanied by both parents. [W. P. P.]

WHITEFRONTED-GOOSE [*Ánser álbifrons* (Scopoli). Grey-goose (generic), laughing goose (Devon). French, *oie rieuse*; German, *Blässen-Gans*; Italian, *oca lombardella*].

1. **Description.**—In the whitefronted-goose the beak is of a pale rose-pink colour, and the nail white; a more or less conspicuous patch of orange-yellow occurs on the culmen, between the nares, and on the sides of the lower jaw, and the legs are orange-yellow. (Pl. 152.) Length 27 in. [685·0 mm.]. A broad band of white, bordered behind with black, surrounds the base of the beak. The upper parts are of a dark greyish brown, paler on the crown and cheeks, while the scapular, interscapular, wing-coverts, and flank feathers are tipped with greyish white, and the secondaries edged with greyish white. The upper tail-coverts are white. The fore-breast is pale ash-grey, the breast white with irregular bars or patches of black increasing in size with age; abdomen and under tail-coverts white. The female is rather smaller than the male. In young birds the beak is dark grey, tinged with pink, the nail greyish white, while the black bars on the breast are slightly developed. In the juvenile plumage a black frontal band takes the place of the black and white band of the adult, the belly is light grey with dusky spots. The beak is grey tinged with flesh colour, and the nail is grey, while all the feathers are much narrower than in the adult. Young in down dark grey. [W. P. P.]

2. **Distribution.**—This species is only a winter visitor to our islands, and its breeding grounds lie in the Far North. It has not been found nesting in Scandinavia, but according to Goebel it breeds in Russian Lapland, and also nests on Kolguev, Novaya Zemlya, the Kola and Kamir Peninsulas; while in Asia its breeding range includes the lower Ob and Yenisei, the Taimyr, Great Liakoff Isles, and the

tundra of Eastern Siberia. A few pairs also nest in North Iceland, but American writers distinguish the race which is found in arctic North America and Greenland as *A. albifrons gambeli.* In winter it is found on migration throughout Europe, south to the Mediterranean and the north of Africa, and casual on Madeira, while Asiatic birds reach Northern India, China, Japan, and Corea, and the American race wanders to Mexico and Cuba. [F. C. R. J.]

3. **Migration.**—A cold-weather visitor from the Far North in varying numbers, appearing between 29th September and 28th October (cf. Clarke, *Studies in Bird Migration,* 1912, vol. i. p. 159). In Ireland the species is abundant and widespread in winter, both inland and on the coasts: October to late April is the period of its stay, but there are also records for September and May (cf. Ussher and Warren, *B. of Ireland,* 1900, p. 177). In Great Britain it is only abundant locally, chiefly on the coasts. Islay, the Northern Isles, and the Moray Firth are notable Scottish localities, while in England it is the southern and south-western districts that are most favoured (cf. Saunders, *Ill. Man. B. B.,* 2nd ed., 1899, p. 399). Gregarious. [A. L T.]

4. **Nest and Eggs.**—Does not breed in the British Isles. [F. C. R. J.]

5. **Food.**—Young shoots of various aquatic plants, grass, clover, corn when and where it is to be had, and wild fruits: the young feed on insects, snails, and Crustacea, and display a fondness of the "mares-tail" (*Equisetum*); they are accompanied in their search for food by both parents [W P. P]

BEAN-GOOSE [*Ánser fabális* (Latham). Grey-goose (generic), bog-goose, harvest-goose. French, *oie sauvage*; German, *Saat-Gans*; Italian, *oca granaiola*].

1. **Description.**—In the bean-goose the nail and basal part of the beak are black, enclosing a large orange-coloured area, and the legs are orange. The sexes are alike. (Pl. 152.) Length 34 in. [863·0 mm.]. The upper parts are brownish grey, much darker—chocolate—on the scapulars and interscapulars, which are marked by bars of greyish white formed by the tips of the feathers; the inner secondaries are similarly edged with greyish white, and the lesser wing-coverts are mouse-coloured. The lower back and rump are dark brown, the sides of the latter and the tail-coverts white. The under parts are white shading into brown on the throat, breast, and flanks, which are barred with greyish white. Immature birds have the pale tips to the back and flank feathers tinged with rufous, and the feet yellow rather than

orange. The juvenile plumage is an earthy grey colour, paler on the under parts; the secondaries edged with white. The legs and feet greyish yellow. The young in down is of a light grey, the beak blackish, and the legs dead black. [W. P. P.]

2. **Distribution.**—This species is also a winter visitor to our islands. It is frequently stated to breed in Iceland, but there is no confirmation of this statement; and there is much difference of opinion as to whether two species have been united under one name, *A. fabalis* (or *segetum*) and *A. arvensis.* Some form of bean-goose breeds in Scandinavia north of lat. 64°, as well as in the Kola Peninsula, Lapland, and the Archangel and Olonetz governments and south to lat. 62° in Finland. It breeds in large numbers on Kolguev, Novaya Zemlya, and the Petschora district, and also ranges into Siberia, but there seems little doubt that the East Siberian birds at any rate are separable. During the winter months the migratory movements of this species extend south to the Mediterranean and Black Seas, and in Asia it has been met with in Palestine and on the Caspian, while the eastern form visits China and Japan, and some race has been recorded as a casual from Madeira. Statements of breeding in E. Greenland probably refer to the pinkfooted-goose, but the whole literature of this species is still in a very confused state. [F. C. R. J.]

3. **Migration.**—A cold-weather visitor from the north, exceptionally appearing as early as 11th September, but usually between 5th October and 3rd November, and remaining till April or May (cf. Clarke, *Studies in Bird Migration*, 1912, vol. i. p. 159; and Nelson, *B. of Yorks.*, 1907, p. 413). It visits parts of Great Britain in large numbers, but is much less common than the pinkfooted-goose on the east coast. It visits Ireland mainly in severe winters, and is usually neither very common nor widespread (cf. Ussher and Warren, *B. of Ireland*, 1900, p. 177) Our information regarding the migration and winter distribution of the various "grey geese" is unsatisfactory, owing to the fact that the exact species is very frequently unascertainable in the field. Of the migratory habits of the genus we may say that the birds travel both by day and by night, and in large flocks which very often display the characteristic flight-formations. [A. L. T.]

4. **Nest and Eggs.**—Does not breed in the British Isles. [F. C. R. J.]

5. **Food.**—Corn and rice in cultivated districts, grass and other vegetation, and in autumn wild fruits: the young feed on insects, snails, and Crustacea, but as to their guardianship by the parents nothing is known. [W. P. P.]

PINKFOOTED-GOOSE [*Ánser brachyrhýnchus* Baillon. Grey-goose (generic), black-nebs (Scotland) French, *oie à bec court*; German, *Kurzschnabelige Gans*]

1. **Description.**—The pinkfooted-goose may readily be distinguished by its relatively short beak, wherein the nail and the upper part of the basal portion are black, the rest pink, and the legs pink. The sexes are alike. (Pl. 152.) Length 28 in. [711 0 mm.] The male has the upper parts brown, the scapulars and flank feathers broadly edged with light grey, major coverts slate-grey, broadly tipped with white. Lesser wing-coverts ash-grey. The breast is rufous brown, pale edges to the feathers giving a somewhat barred effect. Immature birds are duller in coloration, and have less pink on the beak. The young in down grey. [W. P. P]

2. **Distribution.**—Another winter visitor, especially to our eastern coasts It breeds in considerable numbers in Spitsbergen, and almost certainly also in Franz-Josef Land. Possibly a few breed also in N. Iceland. With regard to its occurrence in Greenland, we have as yet no authentic record. Its winter quarters are in North-western Europe, and its main resort is the British Isles; but it has also occurred in small numbers in Scandinavia, N. Germany, Holland, Belgium, and France, possibly also in Spain and Portugal. Records of the occurrence of this species in Southern Asia probably refer to Sushkin's goose, *Anser neglectus*. [F. C. R. J.]

3. **Migration.**—A cold-weather visitor from the north, mainly to the east coast of Great Britain. It is less known on the west side, although apparently increasing in the Solway Firth, and there is as yet only one Irish record. It arrives between 18th September and 18th October as a rule, but exceptionally as early as 24th August, and the time of its departure, varying to some extent from season to season, is usually about the end of April (cf. Clarke, *Studies in Bird Migration*, 1912, vol. i. p. 159, and Nelson, *B. of Yorks.*, 1907, p. 415). For habits see under bean-goose. [A. L. T.]

4. **Nest and Eggs.**—Does not breed in the British Isles [F. C. R J]

5. **Food.**—Grain, and the tender blades of autumn-sown wheat, with marsh and other grasses and aquatic vegetation. Le Roi found in the stomachs of old birds shot in the breeding season, besides the usual small stones, remains of vegetable food, including stalks, leaves, buds and roots of *Cerastium Edmonstonii*, *Saxifraga*, *Equisetum arvense*, etc. Three young contained leaves and buds of *Salix reticulata*, but no small stones. [W. P. P.]

BARNACLE-GOOSE [*Bránta leucópsis* (Bechstein), *Berníla leucópsis* (Bechstein). French, *bernache à joues blanches*, German, *Weisswangen-Gans*; Italian, *oca faccia bianca*]

1. **Description.**—The barnacle-goose may at once be distinguished in having a white head, save for the crown and nape, which, like the neck and fore-breast, are glossy black. The beak and legs are black, and a more or less well-marked black bar runs from the base of the beak to the eye. The sexes are alike. (Pl. 153) Length 27 in. [685 8 mm.]. The mantle and wing-coverts are lavender-grey, barred with black and white; the breast is greyish white, while the flanks are white barred with grey. The juvenile plumage differs from that of the adult in having the white of the head washed with brown. Young in down dark grey, paler below. [W. P. P.]

2. **Distribution.**—A winter visitor, chiefly to the west side of Scotland. The only certainly known breeding-places at present are Spitsbergen, where Professor Koenig obtained three clutches of eggs in 1907 and 1908, and North-east Greenland, where Manniche observed a colony of about one hundred and fifty birds on the precipitous face of Mount Trekroner, near Cape Bismarck, but found the breeding-sites inaccessible. A pair apparently nested on the Lofoden Islands, but this is quite exceptional. Whether it also breeds in Kolguev, Novaya Zemlya, or North-west Siberia is not yet known; but judging from its known habit of nesting on cliffs, Kolguev would seem to be unsuitable for that purpose. Its normal winter range extends to the shores of the Baltic and North Seas, and it has been recorded from Russia, Scandinavia, N. Germany, Denmark, Holland, and France, while as a rare casual it has been obtained in S Spain and Italy, and observed in Morocco, and has also been recorded occasionally from eastern North America. [F. C. R. J.]

3. **Migration.**—A cold-weather visitor from the Far North It has been recorded as early as 10th July, but more usually appears between 16th September and 24th November (cf. Clarke, *Studies in Bird Migration*, 1912, vol. i. p. 159). It will be noticed that little is known of the summer haunts of the species, but a large proportion of our birds appear to come to us from a north-westerly direction. It is thus most abundant on the west coast of Great Britain, very notably in the Solway Firth, and on the north-west coast of Ireland (also locally on the coast of Louth). At Aranmore (off Donegal) it is first seen in October, sometimes in September, and

passes in flocks, both by day and by night, at intervals till the end of the month they leave by the first week of May (cf. Ussher and Warren, *B. of Ireland*, 1900, p. 182). They reach the Solway, in variable but apparently decreasing numbers, with great regularity between September 28 and 30, always in the afternoon or evening: between April 18 and 20 they leave at nightfall in a northerly or north-westerly direction (cf. Gladstone, *B. of Dumfries*, 1910, p. 251). Forty birds, in two flocks, were recorded from the Solway as late as 4th July 1908, and a single bird, probably ailing, remained there throughout the summer of 1886 (cf Gladstone, *loc. cit.*). It will be gathered from the above that the barnacle-goose travels both by night and by day. It is markedly gregarious. a vast flock, estimated as numbering as many as ten thousand, was seen on the Solway flats in early October 1881—they had apparently just arrived, as they were so tired that they could be approached to within thirty yards (cf. Service, *Annals Scot. Nat. Hist.*, 1903, p. 199). [A. L. T.]

4. **Nest and Eggs.**—Does not breed in the British Isles. [F. C. R. J.]

5. **Food.**—Grass obtained from pastures near the sea, aquatic weeds, Crustacea, and aquatic insects. Le Roi records leaves of *Oxyria digyna* and stalks of grasses from a goose shot in the breeding season in Spitsbergen. Food of young unknown. [W. P. P.]

BRENT-GOOSE [*Bránta bernícla bernícla* (Linnæus); *Bernícla brénta* (Pallas). Clatter-goose, ware-goose, road-goose, horra-goose (Orkneys). French, *bernache cravant*; German, *Ringel-Gans*; Italian, *oca columbaccio*].

1. **Description.**—The brent-goose is easily distinguished by the black colour of the head and neck, the latter with a white patch on each side, and the great length of the white upper and under tail-coverts, which completely conceal the tail. The sexes are alike. (Pl. 154.) Length 22 in. [558·0 mm.]. The scapulars and interscapulars are sooty black. Fore-breast black, lower breast and fore-part of the abdomen greyish brown, hind abdomen and under tail-coverts white, legs black. In the juvenile plumage the white patches are wanting; the fore-breast is grey like the belly and flanks, and the latter lack the light bars of the adult. The wing-coverts have whitish tips, and the inner secondaries whitish margins. The young in down are dark grey above, greyish white below cheek, and throat whitish [W. P. P.]

2. **Distribution.**—The commonest of the geese which visit us in winter. Its

breeding grounds include Franz-Josef Land, Spitsbergen, Kolguev, and Novaya Zemlya, but not on the mainland of the European continent. In Asia, however, it breeds on the Taimyr Peninsula and on the river Yenisei (lat. 72° N.). In Greenland and the north-east of arctic N. America it is replaced by the light-breasted form, while the black brent replaces it in the arctic regions of Western America and arctic Siberia from the Lena eastward. The normal winter range of this species extends to the shores of the Baltic and North Seas, but occasionally it has been recorded from some distance inland, and has occurred as a straggler even in the Mediterranean and on the coast of Marocco. [F. C. R J]

3. **Migration.**—A cold-weather visitor from the Far North in great numbers, generally appearing between 20th September and 21st November, although exceptionally recorded as early as 12th August (cf. Clarke, *Studies in Bird Migration*, 1912, vol. i p 160). It is more abundant on the east coast of Great Britain than on the west—it will be noted that the reverse is the case with the barnacle-goose—but is also numerous on the Irish seaboard. On the last named, birds may be seen in September, or even in August, but their numbers are greatly augmented during October and November: departure takes place in April, some birds remaining till May (cf. Ussher and Warren, *B. of Ireland*, 1900, p. 183). On the Yorkshire coast the main body does not usually arrive till after Christmas, although odd examples may be seen from September onwards: departure takes place in March, but some birds remain till May or even June (cf. Nelson, *B. of Yorks.*, 1907, p. 426). Gregarious; but even when large numbers are present they may pass unobserved, as the species keeps much more to the sea than is the case with the various "grey geese." "In the stomach of a brent-goose, shot on the Yorkshire coast, were found specimens of a mollusc (*Crenella faber*), the only known locality for which is the Sea of Ochotsk; thus proving that wild-fowl will travel enormous distances in a short time" (Harting in Nelson, *op cit*, p 427) [A. L T.]

4. **Nest and Eggs.**—Does not breed in the British Isles. [F. C. R. J.]

5. **Food.**—*Zostera ulva* and other sea-weeds, molluscs and Crustacea. Le Roi states that besides small stones and earth, as well as remains of *Fucus*, moss and grasses, stalks and leaves of *Oxyria digyna*, Saxifrages and other Phanerograms were identified. Roemer and Schaudinn found mussels, as well as grass and other vegetable matter. Young in down, according to Le Roi, are fed on *Gramineæ* and *Oxyria*, and Walter records freshwater algæ in the stomach of one bird. [F. C. R. J.]

The following species and subspecies are described in the supplementary chapter on "Rare Birds":—

Lesser whitefronted-goose, *Ánser finmárchicus* Gunner [*A. erýthropus*] (Linnæus)].

Snow-goose, *Ánser hyperbóreus hyperbóreus* Pallas [*Chen hyperbóreus* (Pallas)]; and

Greater snow-goose, *Ánser hyperbóreus nivális* (Forster).

Red-breasted goose, *Bránta ruficóllis* (Pallas).

Pale-breasted brent-goose, *Bránta bernícla glaucogástra* (Brehm).

[Black brent, *Bránta bernícla nígricans* (Lawrence).]

[Canada goose, *Bránta cánadensis* (Linnæus).] [F. C. R. J.]

THE GEESE

[W. P. Pycraft]

That the Geese stand nearer to the ancestral stock of the Anseriformes than either the Ducks or the Swans there can be no reasonable doubt. And there is therefore no occasion for surprise to find that they are less specialised than either, though possessing the common characteristics of both. Only among the geese do we find longitudinally striped young: they display no seasonal and rarely any sexual peculiarities of plumage, and they lack the eccentricities of development in the matter of the trachea which is so characteristic of the ducks and swans, though in this particular the aberrant Anseranas must be excluded. In the bristly armature of the fleshy tongue they more nearly resemble the swans than the ducks, and in the denticulation of the beak they differ from both, as also in the peculiar shape of the beak, and the singular longitudinal grooves which divide the feathers of the neck.

Gregarious at all times, on the wing these birds fly in Λ- or sometimes in M formation, and such companies are known among sportsmen either as a “skein” or a “gaggle” of geese; but the origin of the terms “gander” for the male and “goose” for the female dates from Anglo-Saxon times.

THE “GREY” GEESE

The four species which are commonly associated under the term “grey geese” are undoubtedly closely related, and this is shown not only by their coloration, but also in their habits. Only one, the “greylag,” breeds so far south as Great Britain, the rest—the white-fronted, bean, and pinkfooted-geese—with their congeners to be considered presently, finding a more congenial environment for the nurture of their offspring in the Far North When in the autumn the grey geese seek our shores, they display an almost inordinate love of grain, which they find on the stubbles—though less is to be gleaned now than in days gone by. After the ploughing, the tender blades of grass and clover form their staple fare Normally they feed by day and sleep by night. But in October, when they first arrive, the fields are full of labourers, and to avoid them the birds huddle together in their roosting quarters on the sand-flats by the shore, or seek suitable cover inland. This disturbing factor is commonly left out of account by those who describe these birds as night feeders.

We know more perhaps of the breeding habits of the greylag than of the three other species to which we have referred, but when all is said this knowledge, which, be it noted, has been gained from observations made on their northern breeding haunts, does not amount to much. Like its congeners, the greylag pairs for life, and thus it is that, arrived on its breeding grounds, nest building is at once begun. Young birds breed possibly in their second year, more probably in their third, and the competition for females among the bachelors occasions some great fights. The younger, unmated, ineligible birds live in the breeding colony, but keep in separate flocks.

The gander takes no part in the duties of incubation, and this is true of all the Geese. But he jealously guards his mate while sitting, and the young when these appear. They are taken down to the water within an hour or two of hatching, where an abundance of insect food, grass, and water-weeds can be relied on. At the end of the day they are brought back to the nest and brooded by the female. In the case of the death of both parents the goslings join other broods, and seem to be willingly adopted by the parents thereof.[1] When about to venture forth to feed, the female thrusts her head out from the reeds and takes a careful survey If all is

---

[1] Alpheraky, *Geese of Europe and Asia.*

Plate 152

Grey Geese

Whitefronted-goose
Pinkfooted-goose
Bean-goose
Greylag-goose

By H. Grönvold

well she sallies forth with her young streaming after her. The gander brings up the rear. If he is the least suspicious he sounds a note of alarm; if his warnings are well founded, and danger imminent, he takes flight immediately, leaving his family to fend for themselves.

According to Naumann, the greylag occasionally gets an attack of "nerves," and both parents will make off with their young to some small sheet of water promising, or seeming to promise, a greater security against surprise by enemies. Having attained their goal, they will then immediately return to the place whence they started, and they will persist in this course with extraordinary obstinacy. Such erratic wanderings may entail a march of several hours across fields, through woods, and even through settlements, so that in their aimless meanderings the young fall victims to foes of all sorts, or perish from the hardships of the journey. Having regard to the fact that swallows will abandon their young in obedience to the migratory instinct, it may be that these strange wanderings are made, not in the interests of the young, but of the parents, who seek a secure retreat for that perilous period, the annual moult, when, for a time, they will be flightless.

More than a hundred years ago, perhaps a hundred and fifty would be nearer the mark, the greylag-goose bred in numbers in our English fens, where the young were annually taken and kept in a more or less reclaimed condition with vast flocks of tame geese, which, it may be remarked, are a domesticated race of this species. Darwin,[1] in commenting on this fact, remarks that though the reclamation of the greylag must date back to very remote times, yet scarcely any animal which has been tamed for so long a period has varied so little, for, save in the case of the white race, these domesticated birds differ but slightly from the wild stock.

That the greylag and the whitefronted-goose are near allies there can be no doubt, indeed the latter would seem positively to have been derived from the former, since it is distinguished therefrom in its exaggeration of features, which in the greylag might almost escape notice. For it will be remembered the greylag shows a more or less distinct line of white around the base of the beak, and indistinct black bars on the chest. These are the distinguishing marks of the whitefronted, by reason of their conspicuous development—at any rate in the adults. It seems, moreover, to be a species in what we may call a state of unstable equilibrium—which is characteristic of evolving species. At any rate it is subject to great variation in size, and seems to have split up into two or three well-marked races or subspecies. We are here, however, concerned only with the typical form, *Anser albifrons,* a winter visitant to Great Britain, local in its distribution and erratic in its appearance. Since it resorts, like its congeners, to the arctic regions to breed, occurring in both hemispheres, it is not surprising to find that nothing is known of its life-history at this critical period, though its eggs and nests have been taken frequently.

---

[1] *Animals and Plants under Domestication*, vol. i. p. 287.

Trevor-Battye, however, lifts the veil, so to speak, for a moment, in his most interesting book, *Icebound on Kolguev,* wherein he cites a case where a snowy-owl attacked the young of a pair of white-fronted-geese Both birds came to the rescue. The gander, flying right up at the owl, from the water, struck out with his wings, causing the marauder to beat a retreat. In another place (p. 207) this author remarks that the young, when pursued in the water, will sometimes effect an escape by diving.

Alpheraky gives us some interesting notes on its migratory movements and flight, gleaned from Eversmann's observations in the neighbourhood of Orenberg. Commenting on the fact that these birds from time to time shift their migration routes, he remarks that on migration they fly like other geese, in a chain, key, or cone; but on short flights, as when setting forth to feed on the steppes, and back again to water, they travel in a disorderly crowd, or in a bunch. In the Don steppes Alpheraky says he has flushed them in swarms of tens of thousands; but having once risen, the hosts immediately broke up into comparatively small flocks, and flew off, one after another, either to another part of the steppe or to water, uttering all the time their loud, laughing cackle.

Of the bean-goose it may be remarked that until recently but one species was recognised; but Alpheraky and other Continental ornithologists now hold that the term "bean-goose" has been inadvertently applied to some seven or eight forms of this bird entitled at least to subspecific rank; wherein, therefore, this bird resembles the whitefronted species in being in a state of unstable equilibrium. But be this as it may—and we doubt the validity of at least some of these subspecies—but one, the typical bean-goose, *Anser fabalis,* is recognised as entitled to a place on the British list. Alpheraky, however, dissents from this, and contends that the great majority of the geese known as bean-geese wintering in Great Britain are yellow-billed bean-geese, *Anser* (*Melanonyx*) *arvensis.* As, however, the distinguishing marks between the two so-called species are furnished only by slight differences in the shape and coloration of the beak, and still more subtle differences in plumage, we prefer to regard them as differences due to individual variation, and perhaps to age only.

In its habits and general appearance the bean so closely resembles the pinkfooted-goose, that the two species cannot well be considered apart in these pages Indeed, in the matter of plumage they are so alike that Seebohm contended that the pinkfooted-goose is no more than a subspecific form of the bean-goose; with which, however, later ornithologists do not agree.

With us the bean-goose and its congener the pinkfooted-goose display the same habits, passing the night on the dry sand-flats, and proceeding at dawn to feed on the stubbles, or failing these to wherever an abundance of grass is to be had. And to these observations on this aspect of their life we may add those of Alpheraky,[1] who remarks that "during the daily rest the bean-geese do not stay long on the water, but when possible, having drunk their fill, swim off to the shoals, or land on sandbanks or islands. During rest, when feeding, these geese throw out sentinels, from time to time relieved by others which have already rested or satisfied their hunger. Sentinels are also placed at night to watch the sleeping flock. Neither on the sea nor on lakes or rivers do geese pass the night on open water, but having swum about and chattered among themselves, the flocks either swim into the growth along the banks, or push out on to the shoals to spend their time in rest till the first gleams of the rising sun. Only for want of such spots do scared flocks in some cases pass the night on open water."

---

[1] *Geese of Europe and Asia*, p 75.

As to the posting of sentinels, we are convinced that is but a pretty conceit, without evidence in fact. Geese are wary birds, and some among a sleeping or otherwise occupied crowd are sure every now and then to look up to assure themselves that all is well, and hence the notion of sentries

Be it noted that while the winter visitations of the bean-goose to Great Britain seem to be declining in numbers, the contrary seems to be the case with the pinkfooted species. And this is supposed to be due to the contraction of the range of the first named, in consequence of the ever increasing areas under cultivation ; but this explanation is hardly satisfactory, since what would affect the one would equally affect the other, in that the two birds throughout their range affect the same environment. Of the pinkfooted-goose when nesting, Mr Trevor-Battye remarks that the gander at times quits his guard post by his sitting mate and begins to walk round and round her, by a regular well-beaten path, meeting any unbidden approach with a prolonged series of short, high notes, recalling those of the brent-goose. When travelling with their young, if alarmed, they will run along, then squat down, stretching the neck along the ground in the attitude assumed by the thick-knee under like circumstances.

Though Seebohm had the good fortune to explore the breeding

Plate 153

Barnacle Geese

By A. W. Seaby

haunts of the bean-goose, he apparently saw nothing of the courtship of these birds, but succeeded in taking its eggs, in the tundras of Dvoinik, in the valley of the Petschora. Soon after the young are hatched, he remarks, the old birds, with their offspring, gather into large flocks and march off into the tundra, where the adults must undergo that most trying ordeal, the annual moult. They march like a regiment of soldiers—the old birds in front, the youngsters in the rear. But ere the start is made the casting of the feathers has already begun. During this period of defencelessness appalling inroads on their ranks are made by the Samoyeds, who surround the helpless birds and kill them with sticks by thousands.

BRENT- AND BARNACLE-GEESE

So much for the "grey" geese. We must now briefly review the life-history of two species which differ from the foregoing in a very striking manner, not only in appearance but also in habits. These two are the brent- and the barnacle-geese. The grey geese are essentially land-birds, the two now to be considered are pre-eminently marine-birds, rarely leaving the immediate neighbourhood of salt water, at any rate during the winter months, which they spend on mud-flats in estuaries, where they find an abundance of their favourite food, the Zostera weed.

Before we proceed further, it is necessary to remark that besides the typical species, with which most of my readers must be familiar, two other geographical races, or subspecies, are now recognised—these are the pale-breasted and the black brent-geese. Both find a place in the list of British birds. They, however, are but occasionally met with in these islands, and differ but slightly from the brent-goose, *Branta bernicla*. Of the black brent, indeed, not more than a score have been recorded.

The typical brent-goose, like the barnacle, comes south only to avoid the rigours of winter in its home in the Far North. A few may put in an appearance on our east coast by the end of October, but not until Christmas has turned do they appear in any numbers. During January their ranks are continually reinforced, and the maximum is attained during February, when, in severe seasons, incredible numbers seek sanctuary with us.

The brent and the barnacle, though presenting much in common both in appearance and breeding range, yet afford some striking differences in their choice of habitat, at any rate in so far as winter quarters are concerned. Thus, while the barnacle-goose chooses our western shores, the brent evidently prefers the eastern, where, on occasion, it is to be met with in thousands: on the north coasts of France, according to Naumann, they occur during some years in millions, and their cries drown the roar of the waves, and their swarms from afar darken the light like smoke. The barnacle-goose, on the other hand, never occurs in great numbers. The brent shows a partiality to estuaries and mud-flats; the barnacle, for grass-covered islands, and even for pasture when this lies near the sea. With the brent it is never friendly, and seems even to avoid its company. In localities where the two live together, the barnacles keep in flocks by themselves and aloof from their neighbours.

Of the brent-goose in winter Mr. Abel Chapman remarks they spend the night at sea and the day on the tidal oozes, but they never go inland to feed in the fields, or travel a single yard beyond high-water mark. Their reluctance to remain long out of the water is a factor in all their habits, since at frequent intervals they must go afloat to drink, splash about, and preen themselves Their favourite food seems to be the sea-grass or Zostera laid bare at low tide, and when feeding on this they advance in close order, all heads down. But they are wary birds, and every now and then one or more will cease feeding to survey the country, and thus avoid surprise by an enemy. But even at full tide, should they still be hungry, they will contrive to secure a sufficiency by a sort of semi-dive, submerging the fore part of the body till only the hinder half is above water, duck-fashion. They appear never actually to dive save when wounded.

"Just at dark," says the author just quoted, "the whole host rise on the wing together and make for the open sea. In the morning they have come in by companies and battalions, but at night they go out in one solid army. . . The whole host, perhaps ten thousand strong, here massed in dense phalanxes, elsewhere in columns trailing off into long skeins, Vs, or rectilineal formations of every conceivable shape (but always with a certain formation)—out they go full one hundred yards high, while their loud clanging defiance—'*honk, honk!*—*torrick, torrick,*' and its running accompaniments of lower croaks and shrill bi-tones, resounds for miles around."

Of the breeding habits of the brent-goose we know practically nothing, and the same is true of the barnacle. But Mr. Trevor-Battye has given us a vivid account of the fate which overtakes thousands of these birds annually on Kolguev at the moulting season.[1] When the birds are at their most helpless stage their island retreat is invaded by the natives in boats, who contrive to get behind the host so as to cut them off from the sea and drive them inland into a huge net arranged somewhat after the fashion of a duck-decoy net. The driving is carried on with all the stealth imaginable, for among the swarm are hundreds of "grey geese"—bean- and whitefronted, and these, as yet, can fly. If they take the alarm, the brents, the birds which alone are coveted, will scatter in all directions. Soon, however, all have been driven into the water, and towards their doom; and now the grey geese rise and circle round in hundreds, till they are lost in the mist. Some, however, have lost their quills, and these, taking alarm, slowly sink themselves. "First they laid out their long necks flat on the water, then, as the boats came nearer they sank their bodies till the water was almost over their backs. They looked like bits of stick. When a boat approached a bird it would just sink its head and shoot forward under the water They never went down like diving ducks."

---

[1] *Icebound on Kolguev*, p 219.

The brents never attempted to dive, which is the more curious since they are more aquatic than the grey geese in their mode of life. "Only like a pack of idiots they 'wauked' and swam along." At last the poor victims reach the mouth of the net, and pause. This is an awful moment for the Samoyeds. Will the birds "break." Hemmed in as they are by boats ranged in a half-circle escape is almost impossible, but nevertheless till the mouth of the net is entered the time is an anxious one. At last a single old goose, a bean-goose, steps out and runs up the bank; one or two more follow, then the first of the brents And now they have started the rest is easy; they scamper headlong into the net, and then men close in behind. Of all that army, every brent was captured. Then followed the sickening scene of the killing. One by one the wretched birds were seized by the head and swung quickly round, by which means the neck was dislocated. Then the body was flung over the net to willing hands outside When the last had been tossed over the counting began—3300 brents, 13 bean, 12 whitefronted. This done, the heap was divided, so many to a choom or family. After this they are brought across to the mainland, and stored for the winter.

That these birds breed on Kolguev there can be no doubt. But Mr. Trevor-Battye could never get the natives to reveal their breeding-place. Indeed they themselves never visit it, for fear of disturbing the birds; and they take every precaution to keep away curious visitors. One can understand their anxiety on this head, for the brent-goose is their mainstay of life throughout the winter. Similarly, as we have already remarked, are the bean-geese depleted by the Samoyeds in the valley of the Petschora.

Plate 154

Brent Geese

By A. W. Seaby

THE SWANS

[ORDER: *Anseriformes.* SUBORDER. *Anseres.* FAMILY · *Anatidæ.*
SUBFAMILY: *Cygninæ*]

PRELIMINARY CLASSIFIED NOTES

[F. C. R. JOURDAIN. W. P. PYCRAFT. A. L. THOMSON]

WHOOPER [*Cýgnus cýgnus* (Linnæus); *Cýgnus músicus,* Bechstein. Wild swan (generic), elk, whistling-swan. French, *cygne sauvage*; German, *Sing-Schwan*; Italian, *cigno selvatico*].

1. **Description.**—The adult whooper may always be distinguished by its large size and the light lemon-yellow colour of the basal half of the beak, the remainder of which is black. The sexes are alike, and there is no seasonal change of coloration. (Pl 155.) Length, male 60 in. [1524 mm.]. The plumage is entirely white; the yellow of the base of the beak is continued backward as a narrow band of bare skin to the eye. The iris is dark brown, and the legs and toes are black. The head and neck have occasionally an ochreous tinge; more rarely this is intensified and assumes a dark copper hue. The juvenile dress is of an ash-brown colour, the under parts paler, while the beak is of a dull flesh colour, tipped and margined with black, and enclosing a central area of orange-yellow; lores greenish white; the legs are also flesh coloured. The completely white dress is not assumed till the third year. Young in down white. [W. P. P.]

2. **Distribution.**—Up to the end of the eighteenth century this fine bird bred at the lochs of Harray and Stenness in the Orkney group, but since that time it has only been known as a winter visitor to our islands. Its breeding haunts include Iceland, Finmark in North Norway, and it is said in the Saltdal (lat. 67° N.), in Sweden, North Finland, Lapland, and in Russia not only on the lower Dwina and Petschora, but also, according to Mr. Buturlin, in several of the eastern governments, south to the Sea of Azoff and the shores of the Caspian. In Asia it is

said to breed in Turkestan, the Tobolsk and Tomsk governments, Northern Siberia south of the Arctic Circle, and east to Kamtschatka and Ussuria. On migration it visits the Færoes, the coasts of the North and Baltic Seas, and continental Europe south to the Mediterranean and North African coasts and the Black Sea; in Asia ranging south to Asia Minor, Palestine, Persia, Central Asia, the Punjab, Sind, and once in Nepal, China, Japan, Saghalien and the Commander Islands, and occurs casually in East Greenland. [F. C. R. J.]

3. **Migration.**—A winter visitor from Northern Europe, occurring annually on the Scottish coasts from October or November onwards, and sometimes lingering till May, although no longer a British breeding species. Mr. Eagle Clarke gives 21st October to 14th November as the usual date of arrival, and 6th October as an early record (cf. *Studies in Bird Migration*, 1912, vol. i. p. 160) The numbers that visit us vary greatly with the season, and it is chiefly in hard winters that the whooper occurs on the English coasts, being then recorded even from the south coast. It has occurred in Yorkshire as early as 19th October, but is most common in January and February: 1829, 1838, 1865, 1871, 1894-95 are years in which it was especially abundant, and in 1880 a flock of at least one thousand birds was recorded (cf Nelson, *B. of Yorks.*, 1907, p. 428). It occurs irregularly on the coasts and marshes of Kent (cf. Ticehurst, *B. of Kent*, 1909, p. 338), and it is not uncommon on the coasts of North Wales, although rarer inland (cf. Forrest, *Fauna N. Wales*, 1907, p. 272). In Ireland the whooper occurs irregularly in all parts, but mainly in the north-west (cf. Ussher and Warren, *B. of Ireland*, 1900, p. 184). It is not always possible to distinguish between this species and Bewick's swan in the various reports, but in Ireland the whooper is supposed to be outnumbered by about twenty-five to one (cf. Ussher and Warren, *loc. cit.*), and in the south-west of Scotland it is believed to be the less regular visitor of the two (cf. Gladstone, *B. of Dumfries.*, 1910, p. 255). A gregarious migrant, which travels both by day and by night; it has been observed passing over the city of Dublin at night (cf. Patten, *Aquatic Birds of Great Britain and Ireland*, 1906, p. 79). [A. L. T.]

4. **Nest and Eggs.**[1]—The nest is placed in Iceland nearly always on an islet, rarely on a spit of land or in a secluded bit of marsh among the hills. In North Russia it is often found in the willow swamps of the deltas of the great rivers. In shape it is conical, with a hollow at the top to hold the eggs, and is built of tufts of grass, turf, moss, vegetable rubbish, and in some cases a few twigs

---

[1] Pinioned birds of this species bred in the Shetlands in 1910, and it seems possible that it might be re-established as a breeding species if protected

of *Salix lanata* and *Vaccinium uliginosum.* Earth and even stones are sometimes used. Faber states that the nest is built by the female, but in captivity a male bird has been seen to shape the nest with his breast as the mute-swan does, and it is more probable that he takes some part in the work. Feathers and down are scattered about, but there is no regular down lining, as with the Geese and Ducks. The eggs are large, creamy white when fresh, but soon stained with peat and mud till they assume a dirty reddish brown hue from nest stains, but have no greenish tinge. They vary, as a rule, from four to six in number, rarely seven, and the average size of 58 eggs is 4·43×2·86 in. [112·6×72·7 mm.]. Incubation, according to Faber and Hantzsch, is performed by the female alone, and lasts 35-40 days (Hantzsch), 40 days (Faber), while in captivity a clutch was hatched out in 42 days at Harewood Park. From observations on a captive bird it seems probable that the male uncovers the eggs and takes short turns while the female feeds. In Iceland eggs may be found from early in May to the end of June, and I have known young to be hatched by June 14. In Russian Lapland Pearson found eggs as late as July 4, but the smallness of the clutch and the late date suggest a second laying. Only one brood is reared in the season, but two clutches may be laid if the first is taken. [F. C. R. J]

5. **Food.**—The food consists, as with the other swans, chiefly of the roots and stems of aquatic plants, but grass is also eaten. St. John noted that in Scotland its food consisted almost entirely of *Glyceria fluitans* and *G. aquatica*, water grasses with bulbous roots. Naumann detected *Trifolium repens* and *T. fragiferum* in the crops of birds examined by him, and also states that its diet includes, besides aquatic plants, water insects and their larvæ, worms, small frogs, possibly also small fishes Sand and small stones are also found in the gizzard, and corn is occasionally taken when available, as well as acorns and fruit. [F. C. R. J]

6. **Song Period.**—Probably varies according to the time of breeding. In the case referred to below the birds had not begun to nest, although other pairs had young on the water. [F. C. R. J.]

BEWICK'S SWAN [*Cýgnus bewickii* Yarrell. French, *cygne de Bewick*; German, *Schwarznasiger Schwan*; Italian, *cigno minore*].

1. **Description.**—Bewick's can readily be distinguished from the whooper-swan, which it resembles, by its much smaller size, and the fact that the orange-yellow of the base of the beak is much smaller in area, not extending beyond the

nostrils. (Pl. 155.) Length, male 50 in. [1269 mm.], female smaller The plumage is entirely white; the iris is dark brown, and the legs and toes are black. The juvenile dress is greyish brown, the iris yellow. The young in down greyish white. [W. P. P.]

2. **Distribution.**—Although Buturlin (quoted by Dresser) includes the Kola Peninsula and the White Sea in the breeding range of this species, there seems to be but slight evidence as yet in support of this view. Goebel records it in spring from the West Murman coast, but Pleske did not include it in the breeding species of the Kola Peninsula. It does undoubtedly breed in the deltas of the Petschora and other rivers flowing into the Arctic Ocean, as well as on Kolguev, possibly on Waigatz, and certainly on Novaya Zemlya. Its range extends eastward along the Arctic shores and islands of Siberia, but from the Lena delta to the Sea of Okhotsk it is replaced by a larger race. On migration it visits the British Isles (especially Ireland) often in considerable numbers, and has occasionally been met with in Norway, Sweden, Denmark, Holland, Belgium, Germany, Helgoland, France, Spain (once), Italy, the Dalmatian coast and Hungary (once), while it is more frequently met with on the lakes of Finland and the Russian Baltic provinces, wintering in Turkestan and occurring casually on the Caspian. The eastern form apparently migrates through Korea, Manchuria, and Ussuria to the coasts of Japan and China. [F. C. R. J.]

3. **Migration.**—A winter visitor from the Arctic regions east of the White Sea, usually arriving between 3rd and 30th November, although recorded as early as 10th October (cf. Clarke, *Studies in Bird Migration*, 1912, vol. i. p. 160). The numbers vary greatly with the severity of the season: in hard winters it is not uncommon on the coasts of Yorkshire and North Wales (cf. Nelson, *B. of Yorks.*, 1907, p. 429; and Forrest, *Fauna of N. Wales*, 1907, p. 271), but it is only occasionally recorded from Kent (cf. Ticehurst, *B. of Kent*, 1909, p. 340). It is more numerous in Scotland, especially on the west coast and in the Outer Hebrides. In Ireland it is a regular and sometimes an abundant visitor to Ulster, Connaught, and parts of Kerry, and an occasional visitor to the remainder of Munster and to Leinster; it arrives early in December as a rule, and leaves late in February, but it has been recorded early in October and also in March (cf. Ussher and Warren, *B. of Ireland*, 1900, pp. 185-6; and Patten, *Aquatic Birds of Great Britain and Ireland*, 1906, p. 80). For remarks on the relative abundance of the whooper and of this species, see under the former. Gregarious: flocks of thousands are to be seen in Ireland in severe winters. [A. L. T.]

4. **Nest and Eggs.**—Does not breed in the British Isles. [F. C. R. J.]

5. **Food.**—Chiefly the succulent stalks, leaves, and buds of aquatic vegetation, torn up from the bottom in shallow water, and no doubt also the larvæ of aquatic insects, worms, etc. Naumann also recognised among the remains of other water plants *Trifolium repens* Thompson found minute seeds and gravel in the stomach of an Irish killed specimen Grass no doubt also forms part of its diet. J. H. Gurney found in a Norfolk killed bird, silt, pond grass, water insects' legs, and the tail of a small fish. The young are accompanied and tended by both parents (H. J. Pearson). [F. C. R. J.]

MUTE-SWAN [*Cýgnus ólor* (Gmelin). Cob (♂), pen (♀), cygnet (juv.). French, *cygne*; German, *Hocker-Schwan*; Italian, *cigno reale*].

1. **Description.**—The mute-swan may at once be distinguished by the fleshy excrescence—the "berry" at the beak—which is of a reddish orange, save the nail, and the edges of the upper jaw, which are black: a broad black band extends from the base of the beak backward to the lores, and upwards to embrace the "berry," and the nostrils are marked by a black patch. The sexes are alike, but the "berry" is smaller in the female. (Pl. 155.) Length 60 in. [1524 mm.]. The plumage is white, and the iris is dark brown, the legs and toes black. The juvenile plumage is of a sooty grey, paler on the neck and under surface, while the beak and legs are grey The young in down are of an ash-grey colour. [W. P. P.]

2. **Distribution.**—It is by no means easy to distinguish between the range of wild birds of this species and those which were originally introduced and have reverted to natural conditions. In the British Isles it is generally regarded as semi-domesticated, but on the Continent it is said to breed ferally in Denmark, Sweden, and North Germany, and certainly does so in the delta of the Danube, while till recently it also bred in small numbers in Greece. In South Russia it also nests in some numbers on the great rivers and lakes and in the Sea of Azoff and the islands on the Caspian, ranging north to lat. 57°. In Asia it is recorded as breeding in Transcaspia, Persia (Seistan), the Tobolsk and Tomsk governments, Turkestan, Mongolia, and Ussuria. On migration it has occurred on the southern shores of the Mediterranean from Marocco to Egypt, and in Asia ranges south to north-west India. [F. C. R. J.]

3. **Migration.**—Resident in a semi-feral condition in nearly every part of Great Britain and Ireland, but an increase has been observed in the south of England in hard weather (cf. Ticehurst, *B. of Kent*, 1909, p. 341). As the species

is found in the true wild state in Denmark and Southern Sweden, and migrates thence in winter, it is probable that a few genuine wild birds occur as winter visitors in our islands (cf. Saunders, *Ill. Man. B. B.*, 2nd ed., 1899, p. 417). [A. L. T.]

4. **Nest and Eggs.**—As a rule the nest is placed on an islet in a lake or stream, not far from the water's edge. It is a large heap of aquatic vegetation of some sort, five or six feet across and eighteen inches to two feet high, composed of dead reeds, flags, rushes, grass tufts, etc., with a hollow on the top in which the eggs are laid. Both sexes take part in the construction of the nest, the male providing most of the material and the female arranging it, while the male bird frequently sits in the nest before the eggs are laid and shapes it by movements of the breast and tail. The eggs are large and somewhat elliptical in shape, and when freshly laid are generally dull greenish white in colour, occasionally showing patches of a deeper greenish tint under a white incrustation. This tends to wear off during incubation, and when near hatching the eggs are often a polished dirty green in colour. Young females will sometimes only lay three to five eggs in the first year, but the normal clutch ranges from five to twelve, although seventeen have been recorded from one nest (probably the produce of two females). (Pl. T.) Average size of 71 eggs 4·44×2·89 in. [112·8×73·5 mm.]. Incubation is performed chiefly by the female, the male remaining on guard close at hand, but he takes a short turn at incubation when she is away feeding. The estimates as to the period differ considerably, and there is probably some variation due to temperature. Oswin Lee says 34-38 days, Heinroth about 35, Saunders about 36, but a pair of Polish swan hatched out in 39-40 days (J. H. Gurney), and Heinroth says it extends exceptionally to as much as 43 days! Possibly the longer estimates include the period of sitting by the male before the eggs are laid. The usual laying time is from early April onward, but eggs have been recorded in March, and in some cases are not laid till May. Later dates are due to second layings, but only a single brood is reared during the season. [F. C. R. J.]

5. **Food.**—A good account of the food of this species is quoted by Stevenson from Dixon, who states that they prefer the lower forms of vegetation, *Confervæ* and *Cheraciæ*; then *Callitriche aquatica* (water starwort), and the *Potamogetons* or pond weeds. Rhizomata of all sorts of reeds, rushes, arrowheads, etc., are greedily devoured, but water-lily roots are scarcely ever touched. Soft, starchy parts of aquatic plants are eaten, and garden produce is preferred when it has been at least twenty-four hours in the water. To this list Mr. Stevenson adds the American weed, *Anacharis alsinastrum*. There seems to be no clear evidence of its devouring

fish spawn, but no doubt much is destroyed when the weeds are being pulled up. In Tiree it was observed to feed on *Potamogeton pectinatus.* Domesticated birds will also eat bread and grain, and Cordeaux states that frogs and water insects are included in their diet. The young are tended carefully by both parents, and subsist on similar food to their parents. [F. C. R. J.]

6. Song Period.—The low courting-notes of this species are only heard early in the year when the birds are pairing. [F. C. R. J.]

The following species are described in the supplementary chapter on "Rare Birds" :—

[American trumpeter-swan, *Cýgnus buccinátor*, Richardson.]
[American whistling-swan, *Cýgnus columbianus* Ord]

THE SWANS

[F. C. R. JOURDAIN].

The Swans form a small and easily recognisable group of birds, familiar in appearance to almost everybody, through the medium of the common mute-swan, which may be seen on most ornamental waters and large rivers in England. Its large size, snowy plumage, and graceful carriage on the water are so striking that even the most unobservant can hardly confuse it with any other bird, except the two rarer wild species which visit us in winter. It is also widely distributed at the present time, and in some favoured localities is extremely common. Thus the famous Abbotsbury swannery at one time is said to have contained 1300 birds, and though the disastrous winter of 1880 destroyed half the stock, the numbers remained stationary for several years at about 700 or 800, and gradually increased till in the autumn of 1911 they reached 1043.[1] Very large numbers are also to be seen on most of our large rivers, and no fewer than 481 were captured at the "swan-upping" progress of 1897 between London Bridge and Henley alone.

It is when we come to consider the status of this fine bird that we find some difficulty in deciding how far it is admissible, in a work which treats of the wild bird life of our islands and does not include domesticated animals. Like the pheasant and the redlegged-partridge, it is said to have been introduced from the Continent, but the introduction obviously took place at a very early period. Tradition ascribes it to Richard Cœur de Lion, who is said to have brought the first over from Cyprus, towards the end of the twelfth century. The earliest indisputable reference to their presence occurs in a manuscript of the date 1272. Three hundred years later they must have increased enormously, for Paulus Jovius (1543) speaks of the Thames as being thickly covered with them. At the present time it is quite impossible to say whether the numerous individuals which are to be seen on our coasts and tidal waters in winter, and breed even in the Outer Hebrides and the west of Ireland, are all descended from our introduced stock, or whether among them are genuine immigrants from the Continent, where truly wild birds still exist. All the swans respond readily to protection and rapidly become tame, so that there is nothing remarkable in a wild immigrant settling down in some spot where it is unmolested and breeding there. Moreover, the semi-domesticated life led by most British-breeding swans has not resulted in the perpetuation of any variations of plumage, unless we class the occasional appearance of what are known as Polish swans under this head Genuine wild birds from Roumania and South Russia are exactly similar to our own tame stock, so that it is not possible to detect with certainty the presence of visitors from other lands. Probably the nearest breeding-grounds of the wild form are some of the mosses of Jylland in Denmark, while the district of the great lakes in South Sweden is also haunted by others. The enormous extent of reed-beds in the delta of the Danube is inhabited by a fair number, as are also the marshes of East Prussia, and the flight from Sweden or Denmark to our east coast is well within the powers of a bird whose winter wanderings extend to the lakes of Algeria and Lower Egypt.

---

[1] See an interesting article by Mr. Marcus Woodward, "A City of Swans," published in *Pearson's Magazine*, 1912.

As a rule home-bred swans are unwilling to fly, and will allow a fairly close approach when unpinioned without taking to the wing, so that nearly all those which are to be seen in the summer in the British Isles, or which allow a close approach in winter, may be safely ascribed to the species *Cygnus olor* (Gmel.). It does, however, occasionally happen that the whooper has been known to become so tame, where protected, that it will come to be fed within a few yards of the spectator.[1]

---

[1] See the account of extraordinary tameness of whoopers on the river Eden in Cumberland in the *Ibis*, 1911, pp 546-548

We must therefore look for other points of difference The carriage of the neck is very characteristic: the mute-swan's neck is gracefully curved in the shape of the letter S, while both the whooper and Bewick's swans carry the neck stiffly upright, so that a wild bird can be distinguished at a great distance by this character.

There is not much difference in size between a whooper and a mute-swan, but the third species, Bewick's swan, is decidedly smaller than either of them. Although this is obvious when the two birds are seen side by side, it is by no means easy to estimate the size of a swan on the wing half a mile away. Fortunately there are other means by which the wild birds can be identified with tolerable certainty, even at a considerable distance. The trivial name of our domesticated bird calls attention to the fact that it is practically, though not entirely, silent. It is true that the elder Naumann states that wild individuals utter a very loud, trumpet-like note, closely resembling that of the common crane, but he adds that it is not heard during flight, as is the case with both the whooper and Bewick's swans, and only very rarely from domesticated birds while swimming. As so little seems to be known with regard to this note, it is possible that Naumann may have taken the call of an unseen crane for that of the swan he was watching. With regard to the other notes, there is, however, no room for doubt. There is a "soft low voice" as described in Yarrell, rather plaintive and with little variety, but not disagreeable. Colonel Hawker printed some bars of this song in musical notation, as formed with two notes, C and the minor third (E flat), and describes how the bird kept working its head up and down as if delighted with its own performance. Naumann also distinctly states that both sexes make a sound which he writes as "*kgiurr*" or "*keiorr*," in different tones, that of the male being deeper than that of his mate[1] An angry hissing noise is also frequently heard when the birds are disturbed at the nest, and the

---

[1] Evidently the same sound which Heinroth writes as "*chr*" he states that it is sometimes used in courtship, so it may possibly be the same as Yarrell's and Hawker's "songs." The alarm-note is given by him as a sharper "*chrr*"

Plate 155

Swans

Mute-swan (red). Whooper-swan (middle).
Bewick's swan

By G. E. Collins

young utter a piping-note. Lastly, when the great bird is on the wing, a creaking noise, which is not vocal, but due to friction of the quills, is audible with each wing stroke, and can be heard quite easily half a mile away, while it is distinguishable by a good ear at double that distance.[1]

Even when all these sounds are taken into consideration, the fact remains that the domestic swan is essentially a silent bird. On the other hand, both the whooper and Bewick's swan are decidedly noisy, and their loud call-notes are most exhilarating, as the herd is seen winging their way over the mud-flats of some estuary, their snow-white plumage and black feet showing up splendidly against the gloomy sky This difference of habit is based on striking distinctions in the anatomy of the three birds. In the fourth edition of Yarrell (iv. pp. 314, 320, 321, and 329) will be found figures illustrating the windpipe and breastbones of all three species. Here it is sufficient to remark that while in the mute-swan the keel of the breastbone is single, as in most birds, and the windpipe short, in both the other species there is a cavity in the sternum, and the windpipe passes along almost the full length of it between the walls before returning, and passing upward into the body cavity, where it is connected with the lungs. There are further differences between the form of the trachea in the whooper and Bewick's swan, which are illustrated in the figures referred to.

The call-note of the whooper is generally described as a loud "*whoo-whoo*" or "*whoop, whoop*" repeated several times in succession, with a slight pause between each double call. Patten compares it to a full-toned whistle, Lilford to a bugle-call, and Naumann to the sound of a trombone. The last-named writer notes that the depth of tone is variable, and differs considerably in individuals and probably also in the sexes. He writes the sound as "*klung.*" The trumpet-like notes of a large flock, mixed with the regular swish of the great wings, are very impressive. When approached in the breeding haunts one hears from both sexes a rather nasal, goose-like, alarm-note, deeper in the male bird than in the female. It is rather a weak note for such a fine bird, and is difficult to express in letters. Naumann writes it as "*kilkliih*," which conveys very little to one who has not heard it, but it does not greatly differ from the alarm-notes of the various species of geese. Hantzsch describes it better as a nasal "*A*" or "*Ang*," and a higher "*Ha*." While watching a pair in 1912 which had not yet begun to nest in a marsh in Iceland, I was much interested to hear several times a low but musical song from one bird, presumably the male It was a phrase of about seven distinct notes, rising slightly, then falling and finally rising again. Probably this little song is only uttered during the courting season; at any rate I have failed to find any description of it in any account of the bird, and there is no hint of its existence even in Naumann's great work.[1]

---

[1] Stevenson also describes a "strange yapping note" like the bark of a small dog, used to entice the young from the nest.

Bewick's swan has also a loud call-note, which is uttered during flight at frequent intervals. In the distance the sound of an approaching herd is not unlike that of a pack of hounds, or still more closely resembles the "*honking*" notes of wild geese. It is a less musical note than that of the whooper, and though Naumann also writes it as "*klung*" is quite different to the whooper's call, and more closely approaches the sound "*tong*." C. J. Patten writes it as "*tong, tong, bong, hong, ong, ongong*," which gives some idea of the varied din of honking notes in different tones which one hears as a flock passes overhead. At the end of February 1904 a herd of forty flew over my house on their way to Swithland reservoir in Leicestershire, and all the time they were in view this continuous series of answering honks was kept up. The alarm-note is apparently a soft, goose-like "*kuck, kuck*" from the male and "*kueck, kueck*" from the female (Naumann), but of the habits and notes of this species in its breeding haunts very little is known at present.

---

[1] The specific name "*musicus*," applied by Bechstein to this species, seems to be particularly appropriate

Nominally the mute-swan is a royal bird in the British Isles, and even at the present time all the swans at liberty on the Thames are the property of the Crown or the Vintners and Dyers Companies. Every year a pilgrimage is made up the river, when the young birds of the year are caught and marked on the bill, generally in July, the process occupying about four days.[1] Although occasionally female cygnets have been known to pair and lay in their second year, the majority do not breed till their third year. After the second autumn they have lost the grey plumage of immaturity and are entirely white. In the case of the so-called Polish swan, the cygnets are white from the earliest stage, and for this and other reasons it was formerly believed to be a distinct species, but it is now generally believed to be only a white variety of the ordinary form.

A certain amount of fighting takes place between the males at this period, and in some cases stubbornly contested battles take place. E. T. Booth describes a fierce fight between two old males, which were holding one another down on the water and flogging one another with their wings, till the water was completely covered with feathers for a long distance and both were exhausted. When once paired the swan is mated for life, and at all periods of the year the two birds are to be seen together, the cob, or male bird, distinguished by his superior size and thicker neck. The choice of partners appears to take place in the autumn, and at the beginning of spring pairing takes place. At such times the plumage of the body lies flat and smooth, while the two birds approach one another and appear from a distance to place their heads together, uttering their note softly at the same time. They do not actually touch though, and presently one bird begins to dip its head into the water and raise it again, the other also following suit, and the movement being repeated dozens of times. Frequently the two birds are so close together that the male dips his head into the water over the female's neck, both birds occasionally pausing to lightly brush their plumage with their heads. Meantime the hen sinks lower and lower in the water till actual pairing takes place, and almost immediately afterwards the two face one another on the water, their breasts almost touching, and the male easily distinguishable by his partially lifted but closed wings.[1] Both birds then wash and dress their plumage.[2] The nesting-habits have already been treated in the "Classified Notes," but a few points of interest may be added. A new nest is built every year, generally within a few yards of that of the previous season; and as it is generally close to the water it is liable to be washed away by a sudden flood. Many cases are, however, on record in which both sexes have worked vigorously to raise the nest when a sudden rise has taken place in the water-level and the nest has been in danger of being swamped or carried away. The eggs are not laid on consecutive days, but with an interval of a day between each, and the pen will often cover them up with loose nesting material when leaving the nest to feed. This covering is carefully removed by the cob on taking her place. As the pen will not resume her position till thoroughly dry, the cob takes charge of the eggs in the meantime, and often shows himself very reluctant to leave. Close observation shows that there is considerable variation in the time during which the pen leaves the nest to feed. Some birds will hardly leave their eggs at all, and at the end of the incubation period are little but feathers and bones; others will remain off for hours together. It is a remarkable fact that in several cases two swans have to all appearance paired in the ordinary way and settled down to the business of nesting, when it has been discovered either that a surprisingly large number of infertile eggs have been laid if both birds are pens, or that incubation is apparently taking place for short intervals only in an empty nest when both are cobs.[3] During incubation the male bird, while guarding the neighbourhood of the nest, assumes the well-known attitude of defiance. The neck is retracted and the wings raised in the attitude technically known as "busking," with the feathers erected till the head is almost hidden. Meantime he advances towards the intruder, driving himself through the water by simultaneous strokes of both feet, and thus proceeding by short rushes. In this attitude there is a superficial resemblance to the nuptial display of the turkey, black-grouse, and great-bustard, but of course they are essentially distinct. The swan's attitude is intended to intimidate an antagonist, and is adopted by a monogamous bird in defence of his mate; while the display of the other birds appears to be a "showing off" on the part of a presumably polygamous male in order to impress the female spectators. An old male swan can at times show himself a decidedly formidable opponent, and it has been frequently stated that a blow from his wing is sufficient to break a man's arm or leg. Mr. Stevenson, however, failed to satisfy himself that any instance of the kind had actually taken place, and a record referred to by Mr. J. E. Harting is not only of American origin, but is related of another species. Mr. Kirkman tells me he was attacked by a male swan on land, and was struck several times on the leg by the bird's wing. The blows were not serious, and the incident was terminated by the simple expedient of seizing the swan by the throat and pitching it into the water, where it elected to remain. Mr. M. Woodward states, on the authority of the Abbotsbury keeper, that one man had three ribs broken by an unexpected attack from behind. On the water the bird is no doubt more dangerous, if it sees signs of fear. A vicious cob does not hesitate to attack a man, or even a boat full of people, and more than one dog has been killed outright or seriously injured in this way.

---

[1] For further information on the subject of swan marks, see Yarrell, 4th ed , iv pp 329-339; and Stevenson, *Birds of Norfolk*, iii p 102.

---

[1] This attitude was erroneously taken by Naumann for the pairing position, which, however, does not differ from that of other birds.

[2] See O Heinroth, *Beitrage zur Biologie, namentlich Ethologie u. Psychologie der Anatiden*, an excellent piece of observational work

[3] Cf Whitaker, *Zoologist*, 1885, p. 263, and Heinroth, *l. cit.*

As all the young are hatched out as a rule on the same day, it is evident that the pen does not begin to incubate until the clutch is complete, for there is a period of about seven to twenty days between the laying of the first and last eggs. When the lengthy incubation is over and the cygnets are hatched and have been induced by the parents to take to the water on the second day of their lives, both parents take charge of them. During the early stages of their life it is quite a common sight to see the young perched on the back of the female, and Yarrell states that he saw the young make use of the extended foot in order to clamber on to the old bird's back. Heinroth believes that the foot is stretched out behind in order to dry the membrane thoroughly before inserting it among the feathers for the purpose of warming it, and observes that it is only in fine weather in spring and summer, when the air is appreciably warmer than the water, that this habit is noted. Unless separated, the young birds remain with their parents till late in the autumn, and in some cases through the winter, but in the following February or March are invariably driven away by the old birds Most of these young birds spend their second year associating with one another in companies, and in the early spring of their third year settle down to married life as soon as they can find a suitable spot for breeding.

Our knowledge of the life-history of the other species is naturally far less complete. The habits of the whooper can, however, be studied without much difficulty in its breeding haunts in Iceland and Northern Europe. Like the mute-swan it is a life-paired bird, and during the second week of April many hundreds pass over the Orkneys, heading in a NNW. direction for their breeding-grounds in Iceland, which they reach about the end of the month. The young birds appear not to breed till their third year, and at one shallow lake in lower Vatnsdalur from fifty to about a hundred of them spend the whole summer. The third year birds betake themselves to the little lochs and tarns, which are extremely numerous in some parts of Iceland, each pair as a rule monopolising one piece of water unless it happens to be a large one. The same breeding-places are resorted to year after year; and in some cases even the same nests, according to Slater, are reoccupied, becoming very solid in time, and measuring as much as a yard in height. Ordinary nests are not much more than 18 inches from the ground. Heinroth states, from observation of captive birds, that the preliminaries to pairing in the whooper and Bewick's swan are exactly similar to those already described as performed by the mute-swan, but the two birds do not adopt the facing position afterwards. The attitude of defiance assumed by the mute-swan is also unknown, although whoopers are quarrelsome birds; and when their nesting-ground is invaded by another pair, they advance at once to attack the strangers, the male leading and the female following close behind. Slater describes how the intruders are ejected "after a good deal of trumpeting and chasing and swaggering, which is most amusing to watch."[1] In some particularly favoured spots two or three nests may be found in tolerably close proximity, but this is unusual.

The cygnets are covered with grey down, and are carefully tended by both parents for about two months, when they are able to fly. Even after this time the family is generally to be seen together, but in August the old birds are in full moult and become restless and inclined to leave their breeding-places for more retired spots, making their way on foot and by swimming towards the big lakes and the sea-coast. The whooper is a much better walker than the mute-swan and steps briskly, lifting its feet high and making good progress, while the mute-swan waddles slowly and awkwardly and is soon exhausted. Those birds which breed on the lakes far inland remain till September, when the young are capable of flight. At the end of September and in October many leave the country, chiefly females and young birds, but many old males winter in Iceland. On migration they are generally seen in small parties flying with outstretched necks in a straggling undulating line. When they alight after a long flight it is almost always in the neighbourhood of fresh water, where they can wash, one of their number acting as sentinel in the meantime. Large parties adopt the wedge formation, an old bird always acting as leader.

Much of what has been written above of the whooper is probably equally true of the smaller species, Bewick's swan, which is oftener seen during the winter months in large herds. The differences in the notes of the two species have already been pointed out, and the distribution of the black and yellow on the bill is best grasped by referring to the illustrations On the tundra of the islands of North Russia and Siberia there is but little vegetation available for nest-building but moss, and Mr. Trevor-Battye describes a nest found by him on Kolguev as a mound 2½ feet high, consisting almost entirely of this material, mixed with lichens and grass.[1] On these open plains they are often conspicuous, standing some 22 inches high. As the male bird is said to remain close to the nest while the female incubates, in all probability the incubation habits of all three birds are similar. Nine well authenticated eggs are smaller than whoopers', averaging 4·07 × 2·65 in. [103·6 × 67·3 mm.] The duration of the incubation period is unknown. In disposition Bewick's swan is timid and gentle, and has little of the domineering and combative nature of the whooper, never molesting the smaller waterfowl, even when confined with them in a restricted space. The surface-feeding ducks in particular are apt to take advantage of the presence of the larger birds, feeding on the weeds torn up by them and lying on the surface of the water.

---

[1] *A Manual of the Birds of Iceland*, p. 48.

Both Bewick's swan and the whooper sometimes show traces of reddish-brown colouring on the head and upper neck. When chemically tested this has been shown to be due to peroxide of iron,[2] and is due to the bird feeding in water charged with iron deposits. A whooper which I watched for some time in June 1912 on a shallow pool among the hills in Iceland, had the head and neck deeply stained with peat and suspended iron, producing a most extraordinary effect at a little distance. No doubt most of this would be washed off, but the iron tends to stain the feathers permanently.

---

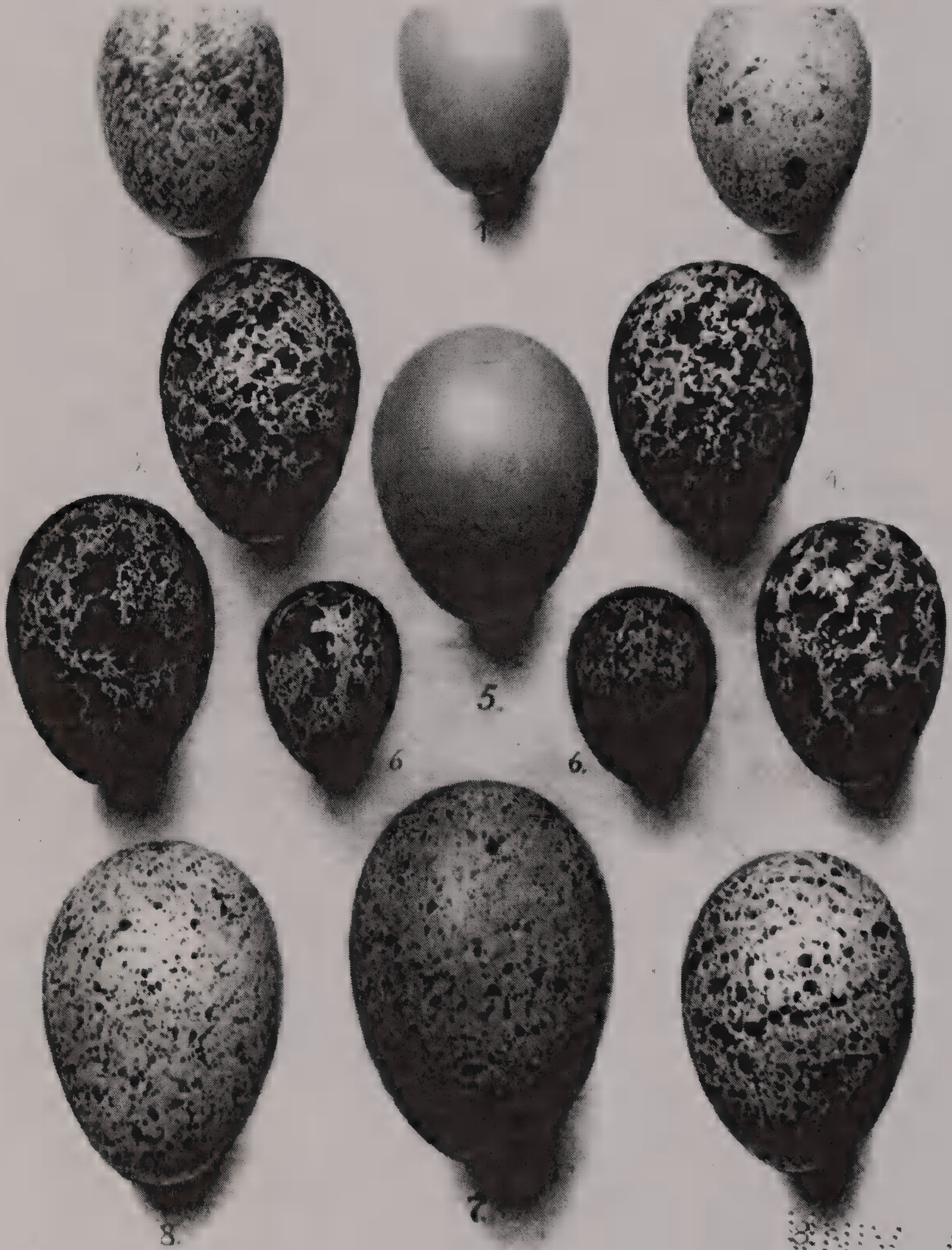
[1] Nordenskiold gives a somewhat similar account, adding that the moss is plucked from a distance of about six feet from the nest, forming a sort of moat round it

[2] Stevenson, *Birds of Norfolk*, iii p. 78.

Egg Plate O

1. Partridge
2. Redlegged partridge
3. Red-grouse
4. Ptarmigan
5. Pheasant
6. Quail
7. Capercaillie
8. Black-grouse

By H. Grönvold



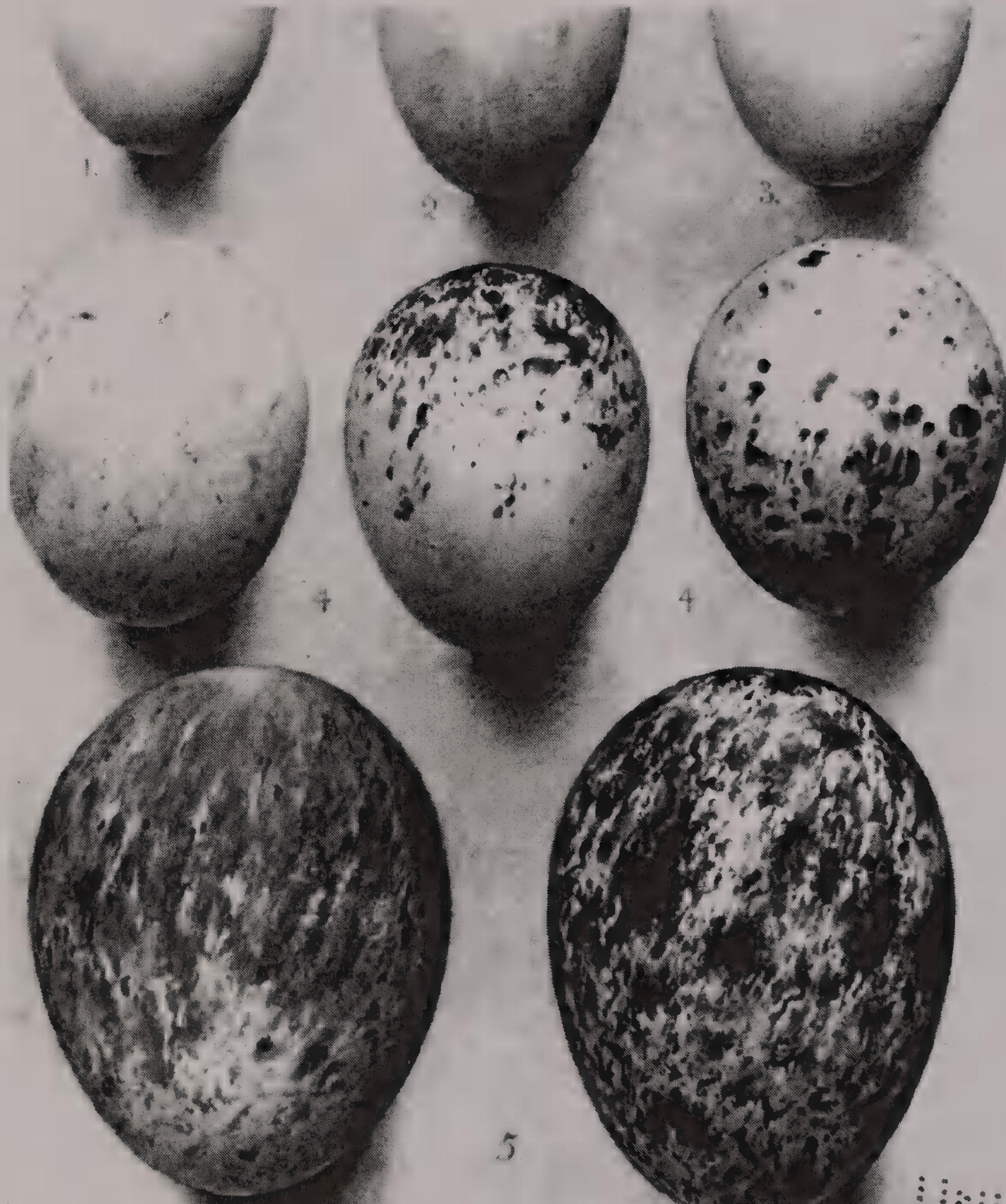
UNIV. OF
CALIFORNIA

[illegible]

Egg Plate P

1. Montagu-harrier
2. Marsh harrier
3. Hen harrier
4. Buzzard
5 Golden eagle

By H Grönvold

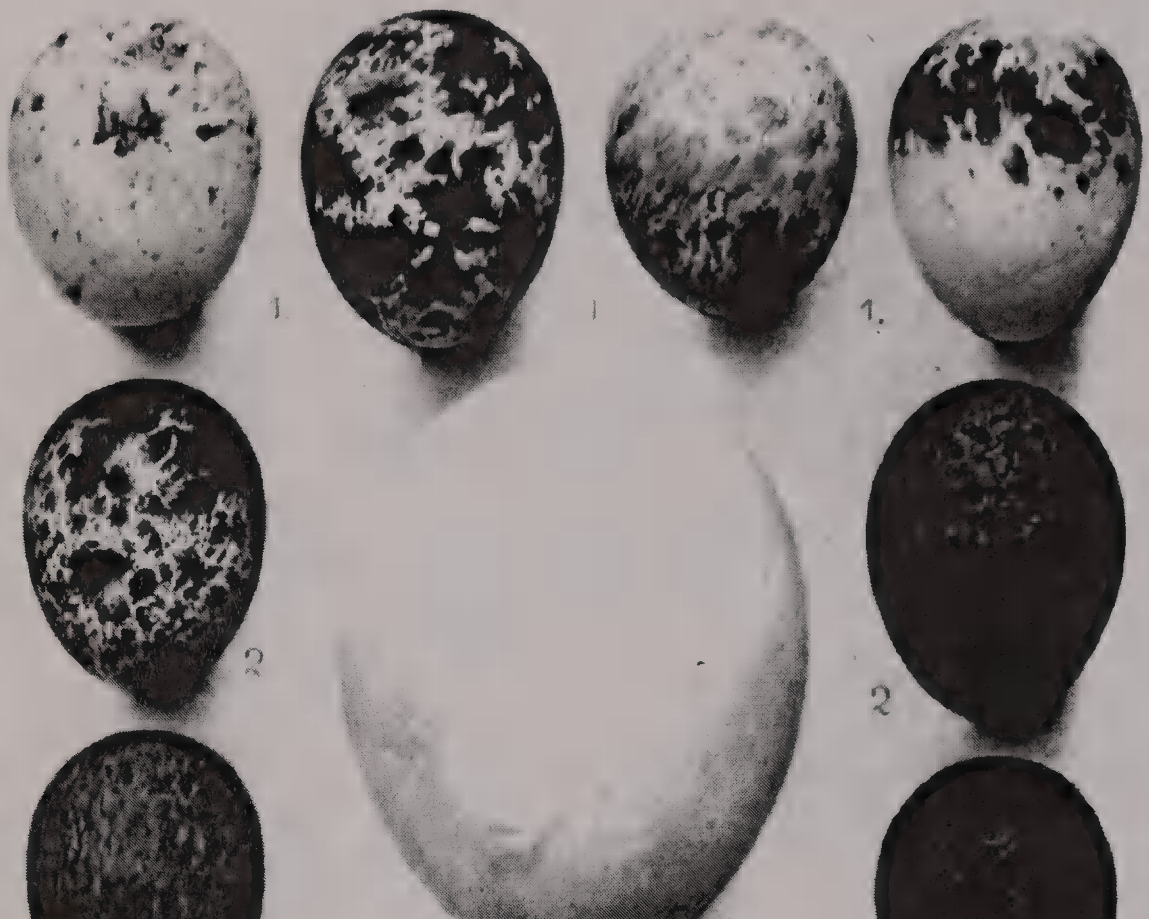


UNIV.
CALIF.

Egg Plate Q

1. Sparrow hawk
2. Kestrel
3. Whitetailed eagle
4. Hobby
5. Merlin
6. Goshawk
7. Kite

By H Grönvold

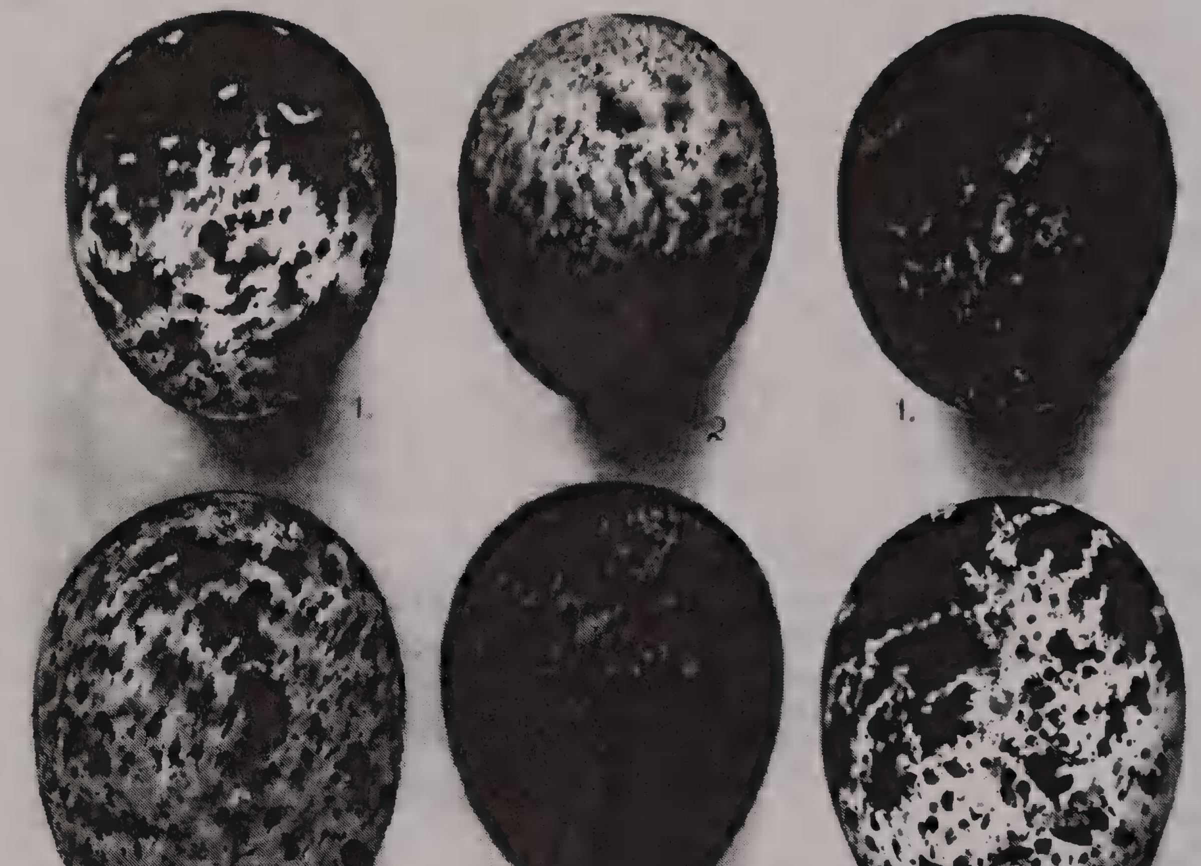


UNIV. OF
CALIFORNIA

Egg Plate R

1 Honey-buzzard
2. Peregrine falcon
3. Osprey
4. Bittern
5 Little-bittern (upper egg soiled by bird)
6. Heron

By H Grönvold



1.
2
1.
3.
2.
3.
5.
4.
6

CPSIA information can be obtained at www.ICGtesting.com
Printed in the USA
LVOW052153131011

250461LV00004B/84/P

9 781176 225947

9 781176 225947